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TROPHIC CHANGES IN CONSUMPTION: A CONTRIBUTION TO THE SYMPTOMATOLOGY OF THIS DISEASE.[1]

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TUBERCULOSIS is a disease, the beginning of which cannot always be traced. The early symptoms do not always mark the beginning of the tuberculous era, as has already been pointed out by Maraglinio. Although it is claimed that it takes from one to three years from the beginning of the infection to the full development, it may safely be said that the shadow of phthisis is cast long before its actual appearance; we can trace it back years and decades to the scrofulous era, and some authors go still further, declaring that consumption is directly inherited. Baumgarten[12] is the foremost supporter of this theory, which is decidedly opposed by Virchow, Cohnheim, Cornet and others. A more acceptable enunciation of Baumgarten is that scrofulosis is already tuberculosis, because it is proven that the products of scrofulosis generate tuberculosis. He regards scrofulosis as a kind of tuberculous sequel and the latter as a recrudescence of the early developed disease. I consider scrofulosis as having a certain analogy to syphilis in that it constitutes the primary and secondary stages of tuberculosis and like syphilis, being curable in these stages, reappears as tuberculosis of the lungs or of other organs like the tertiary lesions of syphilis. During this "latest" stage—an expression introduced by Cohnheim—there is developing a scrofulo-tuberculous stigma, which finds its prototype in the phthisical habitus of individuals with the so-called hereditary taint. I say "so-called" because I am not a believer in the hereditary theory of consumption; I agree fully with the most radical views regarding the infectiousness of that disease; the so-called "disposition" I consider an already existing manifestation of phthisis, believing further that undue exposure is the only source of consumption. That the offspring of consumptives often become tuberculous is not a proof to the contrary, it simply shows that the disease is easily transmitted by intimate domestic and social relations. On the other hand it has been proven[7] that children taken away in due time from the infectious focus usually develop into normal and healthy individuals, unless they are subjected to new infection. It is furthermore not uncommon to see the healthiest and wealthiest individuals afflicted with this dreadful disease, individuals whose family history is perfect.

[1] Read before the German Medical Society, February 5, 1900.

The area involved by the symptomatology of consumption is very extensive, nearly every organ may be affected, either directly by germs or indirectly in the form of so-called trophic changes, which may be caused by a virus, soluble protein substances circulating in the blood. The pathologic importance of some of these trophic changes is increased by the fact that they appear on the same side of the body as the diseased lung. This unilateral appearance of symptoms was first mentioned by Schaffer in 1878, but only in regard to diseases of the upper air passage; later Solly made mention of this peculiarity in regard to the nasal affection. I have found similar unilateral symptoms in other organs, which have not yet been described in the literature of the subject; my observations were made mostly on male consumptives of the Montefiore Home and of the Country Sanitarium at Bedford Station, N. Y.

The pathologic basis for the term "habitus phthisicus" is formed by changes in the skeleton, the etiology of which can be traced back to the scrofulous era. Strophies of single bones have been described, but they do not show any signs of phthisis particularly, except that they are apt to occur primarily in the ribs. The following are significant factors[6]: rapid growth of bones, ossification of the costal cartilage, disproportion between the width and depth of the thorax to its length, prominent angulus Ludovici, narrow scrobiculus cordis. Among the unilateral symptoms may be included scoliosis, depression of one shoulder, a wing-like protrusion of one scapula; the latter caused by atrophy of the musculus serratus magnus. Regarding the disproportions and deformities of the chest, I wish to state that they do not occur in adults with a normally developed skeleton, except scoliosis, and if we do observe it in such individuals we may safely assume that they had acquired such "thorax paralyticus" through tuberculosis in infancy or earlier childhood. Good muscular stratum and a strong panniculus adiposus may easily cover those abnormalities.

E. Fränkel[2] and others have described atrophy and degenerative changes in the muscles of consumptives, consisting of a decrease in the number of the primitive bundles, a granular degeneration and fine granular pigmentation of the same. The emaciation starts mostly in the neighborhood of the thorax and especially in the inspiratory muscles. Visible unilateral atrophy may implicate the intercostal muscles causing thus, with the atrophic ribs, flattened or deepened intercostal spaces; similar changes in the pectoralis major, supraspinatus and serratus magnus cause flatness in the re-

gion of their location. Considerable importance was formerly ascribed to the so-called "idiomuscular contractions," but according to Cornet this was contradicted by Lawson Tait, Stadelman and v. Ziemssen. T. W. Moore[19] states that "myotatic irritability of the pectoral muscles and of the platysma myoides is a valuable sign." Although I acknowledge the value of this sign in the pectoral muscles, I do not agree with the latter writer regarding its value in the platysma, because I found exactly a contrary reaction in this muscle on the affected side. If we tap with the percussion-hammer or any similar instrument the insertion of the platysma along the clavicula we will notice in healthy individuals lightning-like fibrillary contractions of the muscle. This reaction I found diminished 37 times out of 65 cases of phthisis on the same side as the lung was found diseased.

The emaciation in phthisis is due mainly to the disappearance of the fat and the atrophy of muscles. Strauss and Gamaleia noticed a rapid destruction of the panniculus adiposus after injections of dead germs and they attributed this result to the action of proteid of the dead germ cells: Mafucci, Prudden and Hodenpyl have produced marasmus by the same means. But how can we explain the unilateral muscular atrophy of the thorax in phthisis? As it is well known, we observe on the affected side an insufficient expansion, a retardation during respiration, and the question is raised, are the muscles atrophic on account of their inactivity, or does the lung remain inactive on account of the atrophy of the muscles? The lung follows passively the respiratory excursions of the chestwall, and it seems therefore that the activity of the muscles is diminished on account of a reflex impulse from the diseased lung, and here we observe therefore besides the atrophy due to general causes also a local atrophy due to inactivity. By means of systematic exercises I was enabled to increase the expansion of the thorax and of the lungs in consumptives, utilizing thus the idea that strengthening of the respiratory muscles causes also a strengthening of the lungs.

The blood[8] also takes part in the general atrophy and shows changes similar to those observed in cachexia and marasmus. According to Rokitansky,[6] Brehmer and Andral the heart of consumptives is smaller than normal, and Beneke asserts that a congenitally small heart increases the disposition to consumption. Dr. W. Hutchinson,[22] who made 215 autopsies on different animals, says that there exists a certain relationship between the size of the heart and immunity against tuberculosis in animals. I am of the opinion that the smallness of the heart is rather the result of consumption in the early age, whereby the vagus becomes affected and influences the growth of the heart by means of the trophic fibers known to exist in this nerve. Histologically partial and complete atrophies have been described by Leyden, Venn, Strümpell and others; atrophy of the vagus by Vierordt,[7] of the phrenicus by Heine.[7] Jouanneau[7] describes a case of tachycardia in consequence of compression of the left vagus and phrenicus caused by pleuro-pericarditic adhesions (Cornet).

Tachycardia is furthermore caused, according to Riegel, Becker and others, by tuberculosis of the bronchial glands; according to Marfan[21] it is caused by diminution of the respiratory surface. Neither theory seems to be plausible, because irritation of the vagus causes retardation of heart action and on the other hand we notice tachycardia also in cases where there is only a very small respiratory area affected. It is possible that there is an irritation of the accelerator cordis nerves caused by proteids, circulating in the blood, or that certain fibers of the vagus, the so-called inhibitory fibers, are atrophic and thus the functional activity of the antagonistic nerves, the accelerantes, preponderates.

Complications of the upper air-passages in phthisis have a certain etiologic and symptomatologic significance. From the history of the patient the fact is often elicited that these parts were involved prior to the appearance of the pulmonary symptoms and often on the same side. Schäffer[1] in his statistical researches on the relationship of laryngeal disease to lung troubles has proven that long before the clinical diagnosis is established there are pathologic changes in the pharynx in the cavum pharyngonasale, hypertrophy of the tonsils, otitis media, and paresis of the soft palate on the same side on which the lung affection appears at a later period. Schäffer has observed this correspondence in 302 cases, or in 50.3 per cent. Solly[20] found this coincidence between the side of the nose and the side of the chest affected in 65 per cent. of his cases. Krieg, according to Cornet, observed the remarkable fact that out of 275 cases of unilateral tuberculosis of the larynx 252 cases or 91.6 per cent. had tuberculosis of the lung on the same side. In 21 cases of ear complications I found 20 on the same side as the affected lung. According to Schäffer, Cornet and others, paralytic vocal cords and hoarseness are the first manifestations of an impending or already existing lung affection; according to Luschka the recurrent nerve is the cause of this paralysis or paresis.

Mouth-breathing is also a characteristic feature in consumption, caused by chronic catarrh of the mucous membranes of the nose or by adenoid growths, and it is claimed that it is quite often the cause of primary infection of the lung.

The Fredericque-Thompson[3] gum symptom was formerly considered a valuable sign in incipient consumption, but this was disproved by G. Sticker, who examined 1000 cases for this symptom. Caries of the teeth appears more often in the early than in the later stages of the disease; the same may be said of the fetid breath. Conjunctivitis, blepharitis, chalazion[15] are rather early symptoms of phthisis and may be looked upon as evidences of the scrofulous diathesis.

More interesting are the paretic symptoms of the eye. In his text-book E. Fuchs mentions tuber-

culosis as a cause of paralysis of the eye muscles. I have observed impairment of sight in the beginning of consumption, but am not in the position to give further statistical data. Inequality of the pupils, which usually manifests itself as the paralytic form of mydriasis is a valuable sign in phthisis and gains in importance because of its nearly constant equilateral appearance, an occurrence which to my knowledge has not yet been described. Destre found inequality of the pupils in 97 per cent. of his cases; I have seen it in 75 out of 78 cases; of these 75 cases 69 showed the sign on the same side as the lung affection. The dilatation of the pupil is dependent upon the sympathetic, which gets its fibers, destined for the pupil, from the ciliospinal center; hypertrophied glands, it is claimed, produce an irritation of that center. I found that pilocarpine instillations caused disappearance of that symptom. Lately I have observed a greater pigmentation of the iris and of the mammilla on the same side as the diseased lung. Both symptoms belong to the early stage of consumption and have thus far not been mentioned in the literature of the subject, and I believe that the latter, the mammillary symptom, has some diagnostic value. Out of 82 cases I noticed the variation in pigmentation of mammilla in 74 times or in 92 per cent.; in 27 one-sided lung affections there was more pigmentation 25 times on the affected side; in cases where both lungs were affected the symptom prevailed on the more affected side.

The skin undoubtedly offers a great field for the discovery of trophic changes. According to Cornet, "the skin in phthisis becomes rough, dry, scaly; its color becomes sallow, gray, pale and is often changeable." Hyperhydrosis sets in early. Cornet observed it exceptionally on one side; I have frequently observed sweat-drops in phthisical patients during examination in the axilla and on the inner surface of the upper arm also in individuals who did not suffer from hyperhydrosis.

Hypersecretion[7] of the sebaceous glands is also common and gives the skin a fatty appearance and seems to be the cause of comedones in the early stages of consumption. Herpes zoster, a rare occurrence, stands according to Rendu[11] in causal connection with tuberculosis. Acne appears in the early stages of consumption; in 89 patients I have observed it 58 times and among these there was a more extensive eruption noticeable on the affected side in 26 instances. Pityriasis versicolor was wrongly associated with tuberculosis, although it is a fact that it appears quite frequently during the later stages of this disease; Barduzzi[8] made inoculations with the pityriasis detritus and caused tuberculous nodules. These results were affirmed by Dagnet and Haricourt, but Cornet insists that the experiments were wrongly conducted.

Pityriasis tabescentium[7] is a late sign, also chloasma phthisicorum, a hyperpigmentation of the skin in the later stages of phthisis. Both symptoms are rare and are not characteristic of the disease.

Little attention has been paid in the literature of this subject to loss of hair. Defluvium capilitii is a well-known, although not characteristic occurrence in chronic tuberculosis. I also have found quite regularly a partially diminished growth of hair on the thorax of the affected side, and in one instance I noticed the hair on the affected side turning gray. Among 118 consumptives I have found this "atrophy of the hair"—as I would like to call this symptom—100 times; in 14 of the 18 negative cases there was no growth of hair on either side, thus leaving 4 negative cases in a total number of 104. Among 100 cases of atrophy of the hair 95 corresponded to the affected lung, or 95 per cent. I wish to add that these 100 cases included all types of consumption, acute and chronic, unilateral and bilateral. Thirty-four cases of unilateral pulmonary affection were observed, and in these the symptom mostly appeared on the affected side; in cases of bilateral pulmonary disease atrophy of the hair was noticed on the side first involved. In 4 cases of arrested unilateral affection, hair atrophy was noticed on the formerly diseased side. These hair defects appear mostly on the anterior surface of the thorax, around the mammillæ, on the upper part of the thorax, on the shoulders and on the back. This symptom varies not only in extent, but also in intensity; in old chronic cases it is more striking. Microscopically there are no differences to be found.

As a consequence of these nerve-atrophies previously mentioned we may find disturbances of sensibility, of the vasomotor system, and even edema of the skin (Strümpell). In some cases I noticed a diminished reaction to mechanical irritation of the skin. Cyanosis of the skin with club-shaped fingers[10] is a valuable although not a pathognomonic sign in tuberculosis of the lungs. This deformity of the fingers depends, according to Litten, on hypertrophy of the soft tissue and not of the bones. Independently of the latter symptom there is noticed a striking, rapid growth of the nails, which gives them a claw-like appearance (Dufour).[10]

Glands are affected only through infection, and this mostly indirectly. Schlenker[1] described some cases in which the side upon which there were hypertrophic glands and tonsils corresponded with the side of the lung affection, but he did not make this differentiation in his article on that subject. It is known furthermore that the mamma also becomes involved in the general atrophy and lately I have observed in two phthisical girls a decided atrophy of the mammæ on the affected side. In women such a difference is not uncommon, but when observed in girls it may be of diagnostic value. A girl of twenty, whom I examined lately, claimed that four years previously she had some lung trouble with spitting of blood; she was sent to the mountains and recovered after one year. Since then she has suffered from shortness of breath and occasional slight pain in the left side. Examination of this somewhat anemic but strongly-built girl revealed

a diminished respiratory murmur of the left lung, left pupil enlarged, left mammilla more pigmented and decidedly smaller.

The liver presents a much more striking picture of the tuberculous diathesis. According to Ziegler, fatty degeneration regularly occurs in acute phthisis; Pitt[17] says that 22.5 per cent. of cirrhosis patients die of phthisis. Osler says:[17] "A remarkable feature in cirrhosis of the liver is its association with acute tuberculosis." C. R. Burr claims that the liver is more often affected in phthisis of the left lung. Burr, as is Aufrecht, is an advocate of the paretic theory of the origin of tuberculosis and attributes to the vagus, phrenicus and their connections the etiology of the tuberculous diathesis and as a further consequence of this disease mentions diabetes mellitus, one of the most dreaded complications in phthisis. It is claimed that an impaired function of the liver cells is the cause of this complication. The modifications occurring in phthisis in consequence of diabetes are, according to Blumenfeld,[18] absence of hyperhydrosis and decrease of fever. Hemorrhages are also seldom in that stage (v. Leyden, v. Noorden). Bartholow[17] found an abnormal secretion of urea in the urine of consumptives.

To complete the description of these indirect symptoms I have to mention among the earlier ones, gastric disturbances; among the later ones, impairment of the intellect and increase of the sexual desire; and among the terminal ones, amyloid degenerations. With the enumeration of all these signs I have by no means exhausted the subject, and the question arises, what is the cause of these unilateral disturbances?

Is it the virus which is circulating in the blood? Surely not. Are these signs produced by continuity from the diseased foci? This supposition does not seem any more plausible. It seems to be a degeneration of the trophic fibers in the nerves of the parts affected and we may ask, are these nerve-atrophies of primary or of secondary origin? Aufrecht, Burr and other adherents of the so-called paretic etiology of consumption, believe the trophic changes in the tissues to be the primary ones; that the bacillus finds a suitable nidus in that impaired tissue and then causes the well-known symptoms by its subsequent growth and development. Although we cannot deny that this hypothesis deserves some consideration, its truth has not been proven by positive demonstration. It is more likely that the bacillus is the primary cause; that the nerve termini become affected in the diseased tissue, as they do in septic infection, developing ultimately into a chronic degenerative atrophy of the nerves. The frequent occurrence of neuritis, as shown by histological researches, fully justifies this supposition.

In conclusion I wish to illustrate by a few cases the curious coincidence of the side on which the trophic signs occur and that in which the lung is diseased.

Case I.—Acute phthisis with cavity of right lung. B., nineteen years of age, sick about one year; family history negative. Inspection reveals: Right shoulder lower, right scapula deviated, right pupil enlarged. Atrophy of hair on right side of thorax, right mammilla more deeply pigmented, platysma reaction on right side very much diminished. In addition there have been acne defluvium capillitii and caries of teeth from the beginning of the disease.

Case II.—Chronic tuberculosis of the right lung with recent infiltration of the left lung. S. S., twenty-seven years of age, sick seven years; family history negative. For seven years he has been hoarse, right side of nose was operated on three times, right tonsil larger; atrophy of hair, pigmentation of mammilla and iris, paresis of platysma on right side. Acne frequent on left side, caries of teeth from the beginning.

Case III.—Cured tuberculosis of right lung. Dr. B., physician, was attacked nine years ago with consumption; after three years supposed to have recovered. During the acute stage he suffered from disturbances of eye sight of the right eye, right otitis, nose and thorax affection, pain in right side and right testicle. Formerly he had good teeth; during his sickness he lost six of them but none since his recovery. He gained eighty to ninety pounds, was married, had healthy children and attends to his professional duties without interruption. Examination reveals: Right pupil enlarged, hair atrophy and paresis of platysma on right side.

Case IV.—Latent tuberculosis. H., twenty-eight years of age, engineer; consumption in family; had pneumonia (?) three times, mumps at twenty-six, measles at twenty-seven; from fourteen to sixteen there was spitting of blood; he has always coughed and was subject to colds. The examination of lungs reveals on right side nothing positive; on left side, in posterior axillary line, there are fine crepitant râles. Inspection: Right shoulder lower, right scoliosis; dilatation of pupil, hypertrophy of tonsil, hair atrophy on right side. Acne and pityriasis on left side. Quick growth of nails, which are curved, caries of teeth and defluvium capillitii.

The objective evidence of the last case justifies the diagnosis of an obsolete affection of the right lung with a slight acute exacerbation of the left lung. The discovery of early or latent tuberculosis, as is known, often causes great difficulties and the tuberculin test does not always give satisfactory results; besides its application has some difficulties for the practising physician because of the refusal of the patients to submit to the test.

I am confident that the present results, although obtained from a proportionately small number of cases will be verified by the investigation of more extensive material. The practical results of these researches, briefly enumerated, are the possibility of recognizing the early and latent stage of consumption sooner than with the present means or methods; in acute cases, to as-

certain the side affected, if the physical examination does not give satisfactory evidence. If both sides are affected, these signs make it possible furthermore to ascertain the side primarily affected, on account of the occurrence of trophic disturbances on that side, and in cured cases to diagnosticate the location of an obsolete phthisis.

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THE EFFECT OF FLASHES OF ELECTRIC LIGHT ON THE EYE.[1]

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ALTHOUGH some of the cases here reported occurred in my practice more than four years ago, they were recently recalled to my mind by reading Professor Haab's article (*Klin. Monatsbt. für Augenheilkunde*, July, 1899) entitled "Traumatic Macular Changes Produced by Electric Currents." There have been perhaps more cases observed than reported of temporary injury to the eye through intense electric flashes, but the rarity of such cases warrants the present presentation which will at all events call attention to the lurking dangers of the electric light.

Case I.—Mr. E., aged twenty-nine years, one of the chief superintendents of the city electric-light company, consulted me in my office May 20, 1895. The history given was as follows: About one hour previous, while he was trying to adjust some wires, two of them became crossed a short distance in front of his eyes and a blinding flash of light resulted. For a few minutes his vision disappeared, but gradually returned, leaving only a marked burning irritation in his eyes, the reason for the present consultation. On examining both eyes, a marked pink zone of injected blood-vessels could be seen around the cornea. Vision in both eyes was normal. He complained only of a smarting sensation about the lids and a slight amount of photophobia. The use of dark glasses, hot fomentations to the eyes and absolute rest for a few days was the only treatment advised. About two o'clock that night I received a telephone message saying that Mr. E. was suffering so much pain in his eyes that he desired me to come immediately to his house. On arriving I found both eyes a little more congested than on the previous examination. He was suffering from violent aching pains in the eyeball. On close examination the cornea was found to look a little hazy, a condition which was not present when he was at the office. There was marked photophobia. Several drops of a two-per-cent. solution of cocaine were instilled into the eyes and also a drop of weak atropine solution. In about fifteen minutes the patient was perfectly easy and reported next morning at the office that he had remained so all night, and even then he was perfectly comfortable. On examination the cornea was found to be clear and all signs of irritation had subsided. His eyes rapidly returned to the normal state. No changes could be seen with the ophthalmoscope, although the symptoms pointed to a decided retinal irritation.

Case II.—Mr. M., aged eighteen years, also an employee of the Georgia Electric-Light Company. The history of this young man was almost identical with that of Case I., with the exception that he was not seen until two days after the injury. A similar electric flash took place just in front of his eyes and he was also blinded for a few minutes. On recovering from the shock he bathed his eyes in cold water, and except for a slight irritation he experienced no discomfort. The irritation persisting the company sent him to me for examination. R.E., V., 20/30. Improved by no glass. L.E., V., 20/30. Decided ciliary injection in the right eye and very slight in the left. Pupils react to light and accommodation, but appear rather contracted. The cornea of the right eye appeared a little hazy. By ophthalmoscopic examination I must acknowledge that nothing abnormal could be discovered, although the region of macula in the right eye may have looked a little cloudy. Neither in this case nor in the first was any scotoma or contraction of the visual field to be found. The patient was ordered to wear dark glasses, use hot fomentations to the eyes, and a drop of atropine solution was instilled into both. He had no further trouble and vision in both eyes became normal. The flash of light in both cases came from wires carrying a 500 voltage.

Case III.—E. L., aged fifty-two years. Admitted to Grady Hospital on account of an accident similar to Case II. This case was almost identical with the one just reported both in symptoms and the treatment employed.

A few cases have been reported in which intense electric flashes have caused a temporary blindness in which the pathologic lesion has been a grayish discoloration in the region of the

[1] Read before American Ophthalmological Society, Washington D. C., May 1-3, 1900.

macula lutea. The action of snow upon the eyes, producing the phenomenon known as "snow blindness," is of no infrequent occurrence in the frigid zones, and the pathologic conditions there found are quite similar to those seen in the eyes which have been injured by electric flashes.

The subject of pathologic changes in the macula lutea due to traumatic causes first obtained prominence in an article by Professor Haab of Zurich at the Seventh International Ophthalmological Congress held at Heidelberg. Since that time Professor Haab and his associates have continued to study the subject and given at intervals further contributions relating to these traumatic changes. In 1889 E. Meyer of Zurich delivered an inaugural address upon this subject, and in 1896 A. Siegfried of the same city and of the same clinic published an extensive article upon "The Traumatic Changes in the Macula Lutea of the Retina."

Intense light as the cause of retinal and conjunctival changes has been known to careful observers for a long time. Electric light as a cause is of comparatively recent date, and only since it has become so universally popular for domestic use. One has but to note the dazzling effect produced upon the eyes by the bright reflection of the snow or the same effect when we gaze, unaided by tinted glasses, upon the sun in partial eclipse, to realize how irritating and blinding such lights are to our visual members. "Snow-blindness" has been known to ophthalmologists for years, as has also the blinding effect of bright sunlight upon the eyes.

A very interesting discussion of this latter subject with an abstract of all cases can be found in an article by Mackeye, published in the *Ophthalmic Review*. He found that after exposure of the eyes to sunlight the patient noticed a dark spot in the field of vision. This on examination was found to be a positive scotoma which lasted for a certain period of time and then passed away. Mackeye also found that this represented color-scotomata extending over a large area. Patients in such a state will often see objects twisted, producing the condition known as metamorphopsia. The ophthalmoscope will sometimes show no changes, whereas in others a decided hazy condition will be found in and around the macula, occasionally with an accompanying pigmentation. Vision as a rule is reduced, and when this is marked recovery rarely takes place. Pigmentation of the retina caused by the action of sunlight has been adduced by Monoyer as a cause of the condition known as "retinitis pigmentosa." Deutschmann has shown by experiment that concentration of the direct rays of sunlight upon the retina of a rabbit produces a coagulation of the retinal albumen with an accompanying pigmentation. However, such an analogous condition could not be attributed to the action of the sunlight upon the eye. While the action of the sunlight upon the snow produces a decided retinal irritation, it manifests its chief symptoms upon the eye by producing a severe conjunctivitis with sometimes a diffuse keratitis and ulcers of the cornea. It rarely leaves any bad results.

The effect of bright electric light upon the eye has also been investigated and the results noted. Just what degree of brilliancy it takes to produce injurious effects upon the eye has not been definitely settled. It is true that the ordinary incandescent electric light seems the best for general illuminating purposes. It is brilliant, produces less heat and therefore less particles of combustion, is steadier than gas in many instances, and is the nearest approach perhaps to the daily sunlight. However, I must say that experience in the use of incandescent light and the Welsbach gaslight with proper shading has influenced me into a preference for the latter. Of course, the latter is more troublesome to keep and therefore has its disadvantages, but when subdued by the use of white shades it certainly makes a most excellent light by which to work. Personally I have used this light for years and now prefer it to any other. Hartridge of London, in an article published in the *British Medical Journal*, 1892, on "The Effect of Electric Light Upon the Eyes," says that no bad results have ever been observed in the eyes from the ordinary use of the incandescent light. Although since this publication I have seen no other reports to the contrary, personal observation prevents me from agreeing with the author referred to. A case recently under my observation could be attributed to no other cause. Mr. H., aged twenty-four years, night-clerk in a hotel, consulted me last February on account of a slight irritation in his left eye. History was as follows: Physically he was a perfect specimen of manhood. He worked every night as bookkeeper and clerk under the constant glare of the incandescent electric lights and slept during the day. Up to this time he had never had any trouble with his eyes; he gave absolutely no history of syphilis nor could any signs be found on the closest examination; he had never been sick a day in his life, nor had he ever had the slightest touch of rheumatism, and never felt better than at present.

On examination the left eye showed contracted pupil, but no more than the right. It did not respond to light. There was only the faintest zone of circumcorneal congestion. Vision was normal but photophobia was present. Right eye was normal. On using atropine in the left eye an incipient iritis was readily diagnosed. It was impossible to dilate the pupil *ad maximum*, although there seemed to be no points of adhesion. The iritic muscles appeared perfectly torpid.

The case proved to be one of long treatment, although at no time were the objective or subjective symptoms severe. Nothing was used but atropine solutions, hot fomentations and blisters to the temples. Leeches finally produced a most rapid amelioration of the symptoms. In this case, there was no doubt in my mind that the attack must be attributed to the electric light. He worked for hours every night with an incandes-

cent drop-light just in front and to the left, so that there was a constant glimmer, especially in the left eye. There was never any trouble with the right eye. Since that time he has had no further trouble as he was transferred after recovery to day-duty.

During the last few years I have had under my care for ocular troubles a number of young ladies boarding in a large school where incandescent lights were used. In some cases I have had to order a cessation from school work, and in other cases I have substituted a student's lamp for the electric light with the most gratifying results. My experience has been that these incandescent electric lights are not suitable for a light by which to do constant work.

Hewitt in the *British Medical Journal*, 1893, calls attention to a condition of the eye designated as electric ophthalmia. The symptoms of this disease are said to be the same as those of snow-blindness, *viz.*, swollen lids and congested conjunctivæ, later followed by a muco-purulent discharge. This condition is usually found among those employed in electric welding operations, less frequently among those who use arc lights. Several cases have been reported of blinding or dazzling of the retina through intense flashes of lightning which show some similarity to those caused by electricity.

As I have said Professor Haab of Zurich was one of the first to call attention to changes in the retina, especially in and around the macular region from traumatic and constitutional causes, in an article read before the Seventh International Congress at Heidelberg, 1888, and in 1889 E. Meyer from the same clinic continued the study of the subject. These two writers discussed more in detail the vulnerability of the macular region to various causes rather than to any particular one of traumatic origin. Their subsequent writings seem more of a clinical demonstration of their views set forth. In 1894 Dr. E. C. Rivers published a very interesting case in Knapp's *Archives* on "Injury to the Eyes from Heavy Charge of Electricity." This case condensed is as follows: H. E., aged twenty-five years, employed as an engineer in the motor-house of the Denver Car Company, accidentally made a short circuit by means of a small wrench in his hands, causing the full 500 volts to pass through his arm and out at the wrench, accompanied by a loud report and a very intense flash of light. The patient was stunned and immediately had severe pain in the eyes. Rivers saw the patient one hour after the accident and found the following condition present: Face, eyebrows and lids, neck and hand badly burned. On examining the eyes the conjunctiva was found strongly congested and the cornea of both eyes almost opaque. Vision equalled perception of light. Under the use of atropine, castor-oil, and dry aseptic cloths, the eyes progressed well. On the third day the whole eschar on the cornea was thrown off and this being only the epithelial membrane the remainder was left clear. A few days later L.E., vision equalled 20/40; R.E., vision equalled 20/100. The ophthalmoscope showed the media clear. The retina in the right eye looked hazy. Visual fields were normal for all colors. Six months later the patient reported that he still suffered from photophobia and had to wear colored glasses. He was also compelled to look very intently in order to see small objects. In my own cases the flash was not near enough to produce burning of the tissues.

Dr. L. D. Broose of Evansville, Ind., has reported two cases of retinal irritation from electric flashes which correspond in detail with my own: J. H., aged twenty-four years, an employee of the electric street railroad, accidentally received a shock from one of the trolley wires and at the same time the eyes were subjected to a very intense flash of light. When seen five hours later the conjunctival vessels were found injected, the eyes suffused with tears, pupils contracted and the patient suffering intense pain. None of the parts were burned. Patient was directed to stay in a darkened room and a two-per-cent. solution of cocaine was used in both eyes. In twenty-four hours he was able to resume work. F. W., aged twenty-three years, also an employee of an electric street railroad, struck a live wire with a file which he held in his hand and immediately there was an intense flash and the patient was rendered unconscious, this latter condition persisting but a short time. When seen a few hours later the patient was complaining of a severe pain in his eyes. The balls and lids were found markedly congested; pupils contracted. He was treated in the same manner as the first patient and in five days the patient was able to resume work. The ophthalmoscope showed nothing abnormal. No mention was made of the field of vision.

Professor Haab discusses this subject and reports another case, the clinical study of which presents some features of interest. As this article has not appeared in English, I will take the liberty of making an abstract report. H. W., aged thirty-four years, machinist, consulted Professor Haab on August 9, 1895, concerning his eye which had received a flash of light from a dynamo of sixty amperes. He came the same morning, immediately after the injury, because of the dimness of vision noticed, especially in the lower field. He was stunned by the flash of light, which was very near the eyes, and for a few moments could see nothing. The right eye being nearer to the dynamo than the left, it was the most affected. The pain was severe in both as if needles were sticking in them. There was only a slight irritation with some hyperemia of the conjunctiva of the right eye. Both pupils were contracted, the right more than the left. The irides appeared normal, R.E., vision equalled 3/10; no improvement with glasses; L.E., vision equalled normal. The ophthalmoscope showed nothing abnormal. On the next day the condition was decidedly better. R.E., vision equalled 3/10; w. = 0.5 D. equalled 3/6. On dilating the

pupil the left eye showed nothing abnormal. In the right eye a very interesting condition was present: (1) Extending over the whole macular region there was a very fine, milky discoloration so that the normal granular appearance was absent. In the deepest part of the macular center the discoloration was slightly less. A similar discoloration was nowhere present in the retina. (2) Running along the periphery of the retina could be seen a few yellowish-white spots of irregular form and size about once or twice as broad as a large branch of the central artery. Some spots existed also below the fovea, the latter being quite fine. In the middle of the fovea two small bright specks were found. Whether these small spots were in the retina or in the pigment epithelium could not be discovered. However, they were nowhere as white as those found in diabetes or albuminuria. Along the retinal vessels and on the papilla nothing abnormal could be found. The lens and vitreous were normal. The treatment consisted in absolute rest and the wearing of dark glasses. August 16th, R.E., vision 3/6 w. = 1 D; L.E., vision normal. The macular is slightly opaque. October 13th. The eye appeared normal. No signs of cataract.

These cases, as well as the subject itself, are of interest to the ophthalmologist as affording clinical data upon which to base a prognosis whenever such accidents should come under his care. Since electricity has become so universal in domestic use, accidents referable to it as a cause will necessarily be more common. The prognosis in all diseased conditions is determined by clinical experience, and hence the greater the number of cases reported the more certainty there is for a basis of deduction. The writer of this article does not lay claim to any original investigation, but purposes to bring forth from others their own personal experience. In the study of the cases reported there are many points of interest involved and chief among them as to whether the changes produced in the eye had a clinical or traumatic basis. This point certainly opens up an interesting field for investigation. Another point to be noticed was the universal presence of two symptoms in all cases, *viz.*: (1) The contraction of the pupil from the retinal irritation which was so strong that it persisted for several days. (2) The pain present always coming on several hours after the accident.

The action of electric flashes upon the eye is always classed as traumatic. Widmark has made some extended researches as to ocular trouble due to exposure to electric lights. From these he concludes that such are produced by a direct irritation of the parts affected, and that this irritation is produced almost exclusively by the ultraviolet rays, which as is known exert a similar influence upon the skin. This would raise an interesting question as to whether this same cause was not also the active one in the production of those skin lesions following exposure to the X-ray. Widmark has also found that such rays can also produce striated opacities of the lens. If such then be the case, it is justifiable to conclude that domestic lights are injurious to the eyes in proportion to the amount of the ultraviolet rays they contain. According to my own observation the Welsbach gas light has proven more satisfactory and less injurious as a light by which we may read and work than any other of which I have had any experience. It might be of interest to some of you to know the *modus operandi* of the Welsbach light, a name given after Baron Auer von Welsbach who first discovered the principle of such illumination. This light is produced, as you know, by ignited gas passing through a thin conical veil-like body called a mantle. It is on the order of the calcium illuminator. This mantle by being heated radiates a steady strong white light. The chief point is therefore in the construction of these mantles. A recent writer tells us that the mantles are made by "saturating a fabric with a solution of rare mineral earths and then burning out the fabric leaving a delicate crystalline skeleton." The rare earths considered most effective are thorium and cerium and they are contained in mineral mozarite, deposits of which, from having been almost worthless thirty years ago, have now attained great value. The writer also adds that "attempts have been made recently to make mantles on another than the Welsbach principle of saturating a fabric and then burning it out, namely, by making the ingredients into a paste with some gummy substance, drawing it out into threads and then weaving these into fabric, and burning it out as before." In conclusion, I would say that when the Welsbach is used for reading purposes there should always be an under shade, preferably white, so the intensity of the light may be mitigated.

GRAVES' THYROID DISEASE.[1]

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History.—In 1835 Graves of Dublin first described this disease and in 1840 Basedow in Germany again described it. Ever since the disease has been known by the names of these writers or under the name of exophthalmic goiter. I believe that it is always a disadvantage to medical nomenclature to use a writer's or investigator's name to denote a disease or symptom, but it has this undoubted advantage, in that it does not declare for any specific pathology or etiology for the condition. On the other hand, I believe that the much used term, exophthalmic goiter, is a positive misnomer.

In the first place, we can have the symptoms of increased secretion of the thyroid gland without any apparent enlargement of the thyroid. Secondly, we can have an enlarged thyroid with

[1] Read before the Section on Practice of Medicine of the American Medical Association, Atlantic City, N. J., June 5-8, 1900.

symptoms of hypersecretion without any exophthalmos. And thirdly, we can have exophthalmos without an enlarged thyroid and without symptoms of its hypersecretion. Therefore, I suggest the name of Graves' thyroid disease as one both distinctive and descriptive.

Frequency.—There seems to be a widely varying opinion as to the frequency of this disease, the majority of reporters believing that the disease is rare, while a large minority believe that it is very rare and a small minority state that the disease is frequent.[1] I have come to the conclusion that as far as the majority of practitioners are concerned the disease is rare, but that physicians in large centers of population will naturally see a good many cases of a disease which is so hard to cure and so troublesome in its symptoms. Consequently these practitioners see enough cases of Graves' disease to believe that it is frequent. Very rare I believe it is not.

Etiology.—There is no question of the great preponderance of this disease in the female as compared with the male, one writer even going so far as to state that "subjects of this disease are almost without exception women."[2] Dana[3] states that eighty per cent. of the cases are in women and Oppenheimer[4] that the ratio of women to men is twelve to one.

This thyroid disease probably never occurs in infancy and is very rare in early childhood and old age. It is preeminently a disease of young adult life and from the reports based upon the observations of forty observers the vast majority of cases occur between the ages of twenty-five and thirty-five and nearly all cases between the ages of twenty and forty.

Consequently in studying the etiology of a disease which occurs with such great preponderance in women and during the most active part of their sexual life we can but wonder what insidious relationship exists between the ovaries or the uterus and the thyroid gland. This question is answered by Freund,[5] who says that the thyroid gland is always congested and swollen during pregnancy and during menstruation. He also says that when there is continued or severe irritation of the uterus there will become a permanent enlargement of the thyroid. This accounts for the greater frequency of this disease in women than in men, as a gland which so frequently physiologically hypersecretes could easily be stimulated or irritated to more or less lasting increased activity.

The weight of opinion seems to be that this disease is not hereditary, although some reporters[6] have noted hereditary tendencies. I have noted several cases which will bear out the opinion of Dr. Charles Dana,[7] who believes that Graves' disease is not hereditary except in certain families where there is a tendency to goiter. It seems to be both an individual and a family disease, individual in that there may be but one case in a family and that it is not hereditary, but family in that its most frequent cause, intense emotion, is undoubtedly most liable to occur in neurotic families. Thus several members of such a family may show different symptoms of increased thyroid secretion with but one of them, perhaps, developing an actual Graves' disease; in fact, neurotic, as we use it, means emotional, excitable and mentally active.

Twenty of the forty observers reporting on the question place violent emotion as the most frequent predisposing cause. Heart lesions are placed as the next most frequent cause, and ordinary goiter and prolonged coughs are thought by several to be frequent causes of exophthalmic goiter.

We cannot better understand the etiology and symptoms of this disease than by studying the condition of thyroid extirpation and the symptoms of thyroid feeding.

Physiology of the Thyroid Gland.—That the thyroid gland furnishes an internal secretion necessary to the health of the organism is proved by the fact that absence of this gland or its lack of development in infancy produces the condition of cretinism, by the fact that atrophy of this gland causes the condition of myxedema, and, finally, by the fact that complete thyroidectomy causes operative myxedema and death.

Cretinism is a condition of impaired body and mental development, with gross, heavy features, edematous condition of the skin and harsh epidermis, while myxedema causes mental hebetude, thickening of the dermal tissues, and mucous edemas, especially of the face and hands. Operative myxedema, or cachexia thyreopriva, shows the ordinary symptoms of myxedema but much more intense, with tremors, convulsions, decreased cutaneous sensibility, dried skin and falling out of the hair. All of these three conditions, namely, cretinism, myxedema and operative myxedema, are cured and the symptoms kept in abeyance by thyroid feeding.

If thyroid extract or substance is fed to the normal individual in small doses it causes no evident symptoms. In good sized doses, or in small doses long continued, it causes loss of weight, palpitation, dizziness, sweating, tremors, signs of cardiac weakness and general debility, with nervousness and perhaps insomnia; in other words, the very symptoms which occur in exophthalmic goiter, which symptoms I believe are caused by hypersecretion of the thyroid. Also during the exacerbation of a Graves' disease the symptoms are all aggravated by feeding thyroid substance.

The active secretion of the thyroid gland seems to be the colloid material, which is a proteid substance containing phosphorus and iodine, the latter of which was discovered by Baumann in 1895. This gland is probably the only organ of the body that normally contains iodine and the average adult thyroid contains about .004 of this element. The gastric juice does not impair the action of the thyroid substance, though it undoubtedly breaks it up into several new combinations.

Physiologists have found a substance in this

gland which causes dilatation of the blood-vessels and a lowering of the blood-pressure. The gland seems to have the function of regulating the heart and vasomotor system, and it has been found that in absence of thyroid secretion the regulation of the loss of temperature is impaired, in other words, a vasomotor ataxia is present. It is quite possible that the thyroid and the suprarenal glands have the thermostatic power of regulating the temperature.

The thyroid also seems to have a great deal to do with the regulation of the development of connective tissue, for the less this secretion, apparently the greater the connective tissue development.

Examination of the excretion of obese individuals during the feeding of thyroids has shown that the metabolism of the body is increased as proved by an increased nitrogen, sodium chloride and phosphorus loss. Thyroid substance also acts as a diuretic, perhaps because it tends to increase the formation of urea, which is diuretic.

It is interesting to note that one observer, Bettmann,[8] has noted that thyroid feeding can produce an alimentary glycosuria, and we know that glycosuria is a frequent complication of Graves' disease or hypersecretion of the thyroid.

To sum up the physiological action of the thyroid, this secretion seems necessary for the proper equanimity of the central nervous system and perhaps nutrition and development of it; to the proper quantity of mucin that shall appear in the tissues, principally the connective tissues; to the proper organization of phosphorus for the assimilation into bone salts; and by its vasodilator power to properly regulate the peripheral circulation, thus regulating the heat loss and the normal insensible perspiration of the skin, which if disturbed shows on the one hand in the drying of the skin in myxedema, and on the other hand in the increased sweating in Graves' thyroid disease. Also this gland seems to have some power of regulating the rapidity of the cardiac contractions. It is probably easily excited to hypersecretion temporarily by emotion, and we know it to be normally enlarged and hypersecreting during menstruation and pregnancy.

Symptomatology.—To study the symptoms of this disease I would divide the course into periods, *viz.*, (1) the prethyroid period; (2) incipient symptoms; (3) the symptoms during exacerbation; (4) defervescence or, in cases that do not get well, the complications that cause death.

1. According to my belief as to the etiology of this disease, I cannot agree with one-third of those reporting cases who have stated that the onset was rapid. Neither can I believe that there were no symptoms before "the violent emotion" which precipitated the active symptoms. I believe that there is a long period of irritability of this gland as shown by neurotic symptoms, possibly a goiter which is irritating the rest of the gland, possibly some uterine disease or inflammation, or irritation, if the patient is a woman. I believe there have been repeated emotional disturbances, perhaps as far as symptoms go, well tolerated, but all of which conditions have given a chronic stimulation to the thyroid gland until the active symptoms, exophthalmic goiter, are present. Two-thirds of the cases of which reports have been sent to me have shown just this slow development and did not even apparently begin rapidly. The other third began their active symptoms rapidly; but I have not a doubt that the gland had been hypersecreting for a long time before. The apparent rapid onset in these cases due to some violent emotion is the last stimulant to a gland that has been so many times irritated as to finally lose its power of cessation of hyperactivity, and has lost its regulator, so to speak.

In order to diagnose these premonitory symptoms or signs of increased thyroid secretion, we must of course turn to the physiological action of thyroid secretion, namely, its tendency to produce palpitation, sleeplessness, headaches not assignable to any one cause, hot flashes, tendency to perspire readily due to dilatation of the peripheral blood-vessels, nervous irritability and excitability, and, if with these conditions we have continued uterine disturbance, we can state that this woman is in danger of developing Graves' thyroid disease. Doubtless many cases are being treated for functional disturbances in which we have a mildly increased thyroid secretion, not enough, perhaps, to give exophthalmos or an enlarged gland.

2. What are the initial symptoms of an actual developing Graves' disease? I find by my reports that the first symptoms of well-marked cases were just the symptoms to which we have referred, namely, palpitation and enlargement of the thyroid and nervous irritability; and these are the symptoms which the patients themselves have noted as the first objective signs of their disease. This simply means that in the patient who comes complaining of severe palpitation, nervous excitability and irritability, we should examine the condition of the thyroid and for diagnostic purposes feed her for a week on thyroid extract. If she is worse, our diagnosis of pending exophthalmic goiter seems to me to be probable.

3. Classically, we know the three symptoms of an established case of Graves' disease to be exophthalmos, enlarged thyroid and palpitation of the heart. Any one of the three legs of this tripod may be absent, but they generally are all present. The exophthalmos is generally of both eyes, but rarely one eye may be affected and that is generally the right. It is generally constantly present, may be occasionally present, is rarely altogether absent, in the majority of cases is mild in degree, but quite frequently is excessive. This forward projection of the eyeball is probably due to the overfilled blood-vessels in the back of the orbit. The so-called von Graefe symptom is the

inability of the upper eyelid to follow the eye when the patient looks down, due to the bulging forward of the eyeball. Stellwag's sign is the widening of the palpebral fissures, due to retraction of the upper lid, combined with infrequent winking. There may be a retraction of the lower lid and rarely ptosis or weakness of the ocular muscles and therefore inability to converge the eyes, Möbius' sign.

The thyroid gland may be enlarged as a whole, but generally only half of it is enlarged and that on the right side. It varies in size from time to time, but is rarely large enough to cause symptoms from pressure. There may be developed a cystic degeneration and the appearance of a regular goiter, but the rest of the gland is hypertrophied and hypersecreting.

Palpitation is of frequent occurrence and in nearly half the cases is severe. In the rare cases in which palpitation is mild in degree, it is probably in the later stage of the disease, that is, the stage of recovery. The rapidity of the pulse in fully developed cases varies, but averages one hundred and twenty beats to the minute in the majority of reported cases. It may be irregular, is rarely intermittent, but is often a fair pulse. Actual valvular disease as shown by the physical signs seems to be rare, but a large number of cases show hypertrophy of the heart and not a few dilatation. The next most constant symptom is tremor, rapid and involuntary, and most frequent in the hands and arms. General headache, insomnia, and mental depression are almost constant symptoms. Hysteria is present in about one-third of the reported cases and melancholia is certainly not infrequent. Signs of vasomotor ataxia are constantly present, such as vertigo, hot flashes, sweating, cold sensations, sudden paleness, local hyperemias, and, in some few cases, recurrent epistaxis. Pain, in addition to the headache, is most frequently referred to the eyes, next most frequently to the neck, and often to the ears. Dyspnea is of frequent occurrence and generally occurs with palpitation, both of which may be due to any nervous excitation. Cough is often present, probably largely due to circulatory disturbances. The other associated symptoms of this disease can be referred to the nervous condition of the patient or to the etiological cause of the disease, namely, hypersecretion of the thyroid. It is interesting to note that in a large number of cases in women there are menstrual disturbances and generally increased loss of blood. With the frequent palpitation, headache and sleeplessness, we could but expect the digestive disturbances, such as loss of appetite and consequent constipation, or in some cases diarrhea and perhaps vomiting. Most cases during the exacerbation, and I am inclined to think almost all cases, will show a loss of weight, and if the urine were carefully examined we would probably find a daily increased loss of nitrogen. As to how much muscular weakness there will be depends upon the rapidity of the loss of weight, the frequency of the palpitation and the condition of the nutrition. Some patients complain bitterly of the weakness of their legs, even falling down.

The diminished electrical resistance of the skin which seems to be quite a constant symptom when tested, may be due to two causes, namely, to the fact that the blood-vessels of the skin are more dilated than normally and therefore the skin shows less resistance, or that it may be due to the increased excitability of the central nervous system. Malnutrition of the skin may be shown by the falling out of the hair; there may be bronzing of different parts of the body, or there may be vitiligo. Sometimes polyuria is present, and a glycosuria or an albuminuria may develop. If there is polyuria or much sweating, the patient will complain of thirst. Added to the above, we may have all kinds of eye, ear and heart symptoms.

4. The duration of the disease may be from two to ten years or more. If the case does not do well and is to end in death, the complications that will bring this end about are diabetes (one of the most frequent), actual cardiac disease, and possibly a condition of progressive muscular debility or neurasthenia. The frequency of diabetes in this disease of an internal secreting gland is interesting in that other glands furnishing an internal secretion often cause diabetes when they become diseased. This is certainly true of the pancreas, for this gland furnishes an internal secretion, and it is certainly true of acromegaly with disordered pituitary secretion, unless here, too, it is the thyroid that is in trouble.

Cases that have lasted more than five years do not seem to tend to recovery. Cardiac weakness and insufficiency with edemas, passive congestions and albuminurias may occur even to a fatal degree. The severe nervous complications of melancholia or mania, chorea, etc., are rare, although hysteria is a more or less constant symptom. Cases that get well generally do so in two or three years, perhaps sooner, with a gradual amelioration of all the symptoms. It is difficult to estimate the number of cases that die and the number of cases that get well, but a considerable majority recover. Probably not more than ten per cent. die of this disease *per se*, the others die as a result of complications. Cases that get well etiologically do so from the gradual diminution of the secretion of the thyroid. This might naturally occur at the menopause in women.

Pathology.—Time will not permit me to discuss or to mention arguments for and against the various theories which have been offered as to the pathology of exophthalmic goiter. I refer to the cardiac theory, to the sympathetic-disease theory, and to the vasomotor neurasthenia or ataxic condition. which last I consider the result and not the cause of the disease. Briefly, I believe the symptoms to be caused by a hypersecretion of the thyroid gland. This hypersecretion carries with it of course all of the physiological actions of this product. two of which we understand, but we do not know how many

more there are. These two elements of this secretion will cause most of the symptoms present in exophthalmic goiter. First we have the vasodilator substance which we know dilates the peripheral blood-vessels and probably the abdominal vessels, in the former case causing the hot flashes and the sweating, and by filling the blood-vessels of the skin is at least part of the cause of the diminished electrical resistance, although as above stated another cause may be the excitation of the central nervous system. That this dilated condition of the peripheral blood-vessels is not continuous, which would be a condition of paralysis, is shown by the sudden coldness of the surface and chilly sensations, in other words, an ataxic condition of the vasomotor center. This irregular opening and shutting of the blood-vessels is at least one cause of the cerebral irritation giving insomnia and headache, both of which if neglected may lead not only to hysteria, but even melancholia or more serious cerebral disturbance.

Whether due to the diminished peripheral resistance, to the vasodilatation, or, perhaps, to some unknown irritation which this hypersecretion causes to the cardiac nervous mechanism, or a partial paralysis of the inhibitory mechanism, the heart begins to beat very rapidly and tachycardia is a frequent symptom. According to Dana, the rapid heart is probably due to impairment of the inhibitory fibers of the spinal accessory nerve. That there is thickening of some of the blood-vessels, seems to be proved and perhaps is as difficult to account for as the thickening of the blood-vessels in acromegaly. Where the thyroid gland has been found to have its connective tissue increased, I believe the patient has undoubtedly died of an intercurrent disease and the real exophthalmic condition was curing itself. When we consider the number of cases that get well under almost any treatment, we can only infer that the hypersecretion becomes gradually diminished and that the gland itself becomes worn out; I believe it is perfectly possible to have connective tissue form in the gland and the degeneration of the parenchyma go so far as to give diminished secretion and putting on of weight and possibly a partial myxedema.

A heart cannot beat rapidly for any length of time without its muscular tissue becoming weakened, and then any exertion or any extra work thrown upon it will cause a dilatation and the consequent results and symptoms of incompetency, namely, maldigestion of all kinds, passive hyperemia of the liver, and passive hyperemia of the kidneys with perhaps albuminuria.

Another increased element in this hypersecretion is that containing iodine. One function of this substance is to increase the nitrogenous, sodium chloride, and phosphoric acid waste. The body loses weight in an active case of exophthalmic goiter, and we are very liable to have with the increased urea output a diuretic action and polyuria. Whether from this increased nitrogenous metabolism or from some other cause we may have such dietetic and glandular disturbances as diabetes as a frequent complication, and whether these elements which we have described can account for the intense cerebral excitation which occurs, are of course questions. Whether or not there is another element in this thyroid secretion which may be utilized by the system when in normal amount, but when in excessive amount produces a toxic blood state, as held by Möbius, I am not ready to state, although there are a good many believers in the theory that something from the thyroid in this condition irritates the central nervous system.

In regard to the histology[9] of the gland itself in exophthalmic goiter, and I say histology instead of pathology because the typical gland in exophthalmic goiter is an hypertrophy or a condition denoting hyperactivity similar to the developing thyroid or to a mammary gland during lactation. That there have been pathological[10] findings in thyroid glands in these cases does not militate against the theory of normal hypertrophy, because it has been shown that a diseased gland, as colloid degeneration or an injury to some portion of it, or a goiter, can cause the rest of the gland to hypersecrete.

Here I would like to offer some thoughts which occur to me as worthy of discussion. In the first place, about eighty per cent. of all cases of exophthalmic goiter occur in women and between the ages of twenty and forty, while about eighty per cent. of all cases of myxedema also occur in women but between the ages of forty and fifty.[11] The exophthalmic goiter, due to hypersecretion, occurs during the active child-bearing period when the thyroid normally periodically hypersecretes. The myxedema, due to absence of thyroid secretion, occurs at the time of the menopause. Next, it is but a short step to infer that the hot flashes, nervousness, palpitation and cerebral disturbances occurring at the menopause or during that period are due to disturbed thyroid function. A primary hypersecretion before the thyroid atrophies would cause the profuse hemorrhages. As the thyroid atrophies normally after middle life, is its modified function possibly a determining cause of the menopause? Also, is its diminished secretion not one of the causes of the putting on of weight in women after the menopause? Also, as suggested by Bell,[12] who says that carcinoma of the uterus is a sign of epithelial degeneration and hence his treatment with thyroid feeding, is the diminished thyroid secretion the cause of the frequency of cancer after middle life, especially of cancer of the uterus after the menopause? Also, would we find that cancers occurring in young people are in cases in which the thyroid is under-secreting?

Diagnosis.—A well-marked case of Graves' thyroid disease is easy of diagnosis and cannot well be confounded with any other condition. The three cardinal symptoms of enlargement of the thyroid, exophthalmos, and tachycardia, occurring synchronously and with the fourth im-

portant symptom of tremor, give the diagnosis almost at a glance. Believing as I do that this disease is due to hypersecretion of the thyroid gland, a diagnosis of hypersecretion of this gland should be made before the radical symptoms have developed.

Hence, as above stated under the premonitory signs and early clinical history, headaches, sleeplessness, hot flashes, unexplainable sweating, nervousness, tremors, and irregular cardiac action, all or any of them might have increased thyroid secretion as a cause. Of course any tumor, whether a simple goiter or other growth, could press on the vagus or sympathetic and cause some of the symptoms of exophthalmic goiter. These conditions are generally easily diagnosed.

Prognosis.—As to the probable duration of a given case, it is practically impossible to make any estimate. The family tendency to neuroses or the previous neurotic symptoms of a case, and the rapidity of onset of apparent symptoms may cause a fair estimate as to prognosis of recovery. It is better where there is no family tendency to neuroses, where the patient has not previously had any nervous symptoms, and where the onset was apparently rather rapid. Well developed cases may recover in from one to five years. Theoretically, the older the individual in whom it develops, the sooner may recovery be expected. The percentage of cases that entirely recover is variously estimated; perhaps from twenty to thirty per cent. can be expected to get well, although some of these are certainly liable to relapses. Perhaps it is not unfair to state that seventy-five per cent. of all cases can be relieved and rendered more comfortable, this depending of course upon the length of time the symptoms have been present when the case comes under observation. In all probability, if all cases were treated to the best of our ability in the beginning, the majority would get well. By the time a case comes under observation there is likely to be a permanently impaired heart or an almost irreparable neurotic or neurasthenic condition, with possibly metabolic disorders, such as diabetes. Perhaps from ten to twenty per cent. of the cases die from complications directly attributable to this disease. Burr[18] says that the disease is more fatal in men than in women. Pregnancy occurring in women in this disease seems to cause an amelioration of the symptoms, probably due to the fact that this condition requires and uses up a certain amount of extra thyroid secretion. The symptoms are also better during menstruation.

Persistent tachycardia cannot fail to cause weakness of the cardiac muscle and dilatation sooner or later. Likewise hard work or labor will tend to hasten this cardiac weakness, and then all of the symptoms of cardiac dilatation occur. Progressive loss of weight, showing the nitrogenous waste that is going on, produces neurasthenia and, finally, permanent invalidism. Diabetes is a serious complication.

Treatment.—In the first place can this disease, or does this disease, cure itself? I believe that it does. Hence the lauding of so many different methods of treatment as giving good results. Moreover, as this disease tends to show temporary improvement, we must take into consideration this fact in estimating the value of any special treatment. If we believe this disease is caused by a hypersecretion of the thyroid gland, we must also believe that cases recover by the diminution of the amount of this secretion, possibly by atrophy of, or connective tissue-formation in, the gland. Anything that will take up or utilize this secretion, as pregnancy, will improve the case; and as this gland naturally atrophies in old age, age would certainly be a natural cure. I believe that in suspected cases or before the complete development of the case, if we have reason to believe that there is a hypersecretion of the thyroid, the feeding of thyroid gland should increase the symptoms. With our diagnosis thus made we would know how to treat the case. If the symptoms are thoroughly developed, the indications for treatment are: (1) To reduce or stop, if possible, this hypersecretion of the thyroid gland. (2) To prevent complications. (3) To strengthen and build up the system already worn out or debilitated.

In the first place, anything that will tend to increase the outflow or output of this secretion or stimulate the gland to further secretion can do nothing but harm. This is often seen by applying electricity locally, or by considerable manipulation of the gland, or by the taking of alcohol, or by anything that tends to further dilate the blood-vessels, stimulate the heart, or to irritate the gland. Anything that quiets the circulatory system without putting more blood at a greater tension into the head will do good. This does not mean that every case of cardiac palpitation in exophthalmic goiter should have digitalis or some equivalent, because I believe that in the cases without dilatation or without real cardiac weakness these drugs will often cause more headache and more cerebral trouble than before. With cardiac dilatation digitalis or its equivalent always does good, but strophanthus often acts more satisfactorily. It can readily be seen that with this treatment we are symptomatically treating the case, that is, combating the rapid heart and the dilated condition of the vessels without eradicating the cause of this condition. Our strongest adjuvant in bringing about this quiet heart-action and the diminished irritation and excitability and therefore hypersecretion of the thyroid is absolute rest in bed, mental as well as physical rest, for anything that excites this easily excitable heart will add to the unpleasant symptoms.

Now, as to any possible treatment to actually prevent this gland from hypersecreting, we naturally turn first to organic extracts. I do not believe that thyroid extract can do anything but harm except in cases in which the active stage of exophthalmic goiter is passed and a stage of

diminished secretion and possibly mild myxedema is present. We have all seen these cases of exophthalmic goiter, and I have one now under observation that is thriving on thyroid extract, whereas all my other cases are made worse by it. The patient has some palpitation of the heart, and an enlarged thyroid, but no headache; she is growing stout, sleeps well, but is very weak. Hence, I believe if there is any value in the use of thyroid extract in the treatment of exophthalmic goiter, it is at a time when the gland is the seat of sufficient connective tissue or colloid degeneration to impair its secretory functions.

Recently Lanz[14] of Berne has experimented with the serum of animals deprived of their thyroids, which serum consequently, he says, contains the toxic substances capable of neutralizing thyroidal hypersecretion. On this theory he gave to three patients the milk from goats deprived of their thyroid glands with good results.

Theoretically, the suprarenal extract or substance should be good treatment for exophthalmic goiter where the vasodilating element of the thyroid is increased, suprarenal being a vasocontractor, but Moore[15] and Purinton have proved that this vasocontracting element of the suprarenal is not absorbed by the stomach; hence, if this treatment does any good in hypersecretion of the thyroid, it is some other and not the vasocontracting element. Therefore, I cannot but believe that clinicians who have had much success with suprarenal treatment in Graves' disease happened to give this substance at a time when the symptoms were ameliorating. Personally, I have seen absolutely no results from the use of suprarenal extract in this disease.

The thymus gland treatment of exophthalmic goiter is beginning to have a large backing, and in several of my cases I believe that the whole condition has been improved by this treatment, one or two tablets being given daily. Perhaps one of the first in this country to recommend thymus treatment in this disease was Dr. S. Solis-Cohen.[16] He reported that he had treated twelve cases of exophthalmic goiter with thymus gland. Whether this gland slows up, or diminishes, or combats the secretion of the thyroid, we do not know. It certainly does not contain iodine.

Other drugs which will diminish the secretion of this gland, but unfortunately at the same time upset the secretion of other glands, are morphine, codeine, belladonna, and hyoscyamus or the alkaloids of the latter. Good results have undoubtedly been obtained from any of these four drugs because of the diminished secretion. Theoretically, were we to use these drugs for this object morphine or codeine would be most indicated as not only diminishing the secretion but quieting the heart. Hyoscyamus and belladonna, especially the latter, must excite the heart while they are stopping the secretion of the thyroid, and the discomfort which results from pushing belladonna or hyoscyamus cannot recommend them as good treatment. Morphine will produce more or less of a habit, and except to tide over a certain period of exacerbation, is not often justifiable. Codeine will cause less general disturbance, but is less effective.

The immense amount of restlessness, cerebral irritation, excitation and hyperemia may compel the administration of bromides. They will always do some good, whether by preventing the hyperemia of the brain, or whether by combating the irritation of the nervous system caused by the toxic substances formed in such large amount by the thyroid, we do not know. It is purely symptomatic treatment, and, if pushed to any great extent, can cause nothing but debility.

The iodide treatment has many advocates. It probably does little if any good in small doses and in large doses can but increase the waste of the tissues and, if it does any specific good, it must be by causing atrophy of the gland and at the same time must cause atrophy of other glands. Good results have been reported from sodium phosphate, and theoretically this would be compensatory treatment considering the large loss of sodium chloride and P_2O_5 caused by the hypersecretion of the thyroid.

Electricity can only be a part of a general tonic treatment. General faradization can but do good if it does not increase the nervous excitability. Central galvanization of the sympathetic system possibly might do good, and faradization over the gland might possibly ultimately cause a better tone and contraction of the gland, but the stimulant action of the galvanic current locally with the negative pole active would be contraindicated, and with the positive pole active for the purpose of diminishing the blood-supply to the gland would be problematical.

As to operative treatment, I find but few believers in surgical interference with this gland for the ordinary symptoms of exophthalmic goiter. There can be no question of the advisability of removing a portion of the gland if there are pressure symptoms. Theoretically, if we find a cystic growth or colloid degeneration, or some enlargement of some portion of the gland, and such have been proved to be able to so irritate as to cause hypersecretion of the rest of the gland, it would be good treatment to remove that pathological portion. Dr. M. Allen Starr[17] suggests that some of the deaths after operation are caused by the handling of the gland causing an increased absorption of the secretion, thus poisoning the system.

Dana[18] says that he believes in cases that cannot rest or have proper treatment for one or two years the advisability of surgical interference should be considered; otherwise he believes it unjustifiable. Operation however may not completely cure.

To sum up, then, the best treatment in my opinion is rest, thymus extract in small doses, strophanthus, and bromides if must be. Permanent good results should not be expected for from one to two years, and even then relapses may

occur. The condition will always be temporarily better during menstruation and during pregnancy, and probably become permanently cured at the menopause. Complications, such as cardiac dilatation, should be treated concomitantly with the goiter. If diabetes occurs, perhaps codeine is one of the best remedies for both conditions. All uterine disorders should be treated.

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THE STATUS OF GENERAL ANESTHESIA IN 1900.

BY M. L. MADURO, M.D.,
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THE anesthetist of to-day not only has at his disposal a considerable number of reliable agents for the production of general anesthesia, but also a great variety of methods for their administration. The custom of employing one anesthetic for all cases must now be regarded as a bygone practice. Our first and most important duty is the selection of the anesthetic which is most free from risk and danger. That brings us to the question which is the safest and most practicable that we possess to-day. The answer is undoubtedly nitrous oxide and ether. Nitrous oxide alone is admitted to be the safest anesthetic, and if its dangerous element, the asphyxial one, were cut out by the combination of oxygen we would here possess the ideal. The complication of apparatus in the latter prevents its more general adoption.

Nitrous oxide and ether is the more practicable and is a safe combination given by an up-to-date apparatus like Bennett's. This instrument has an advantage in the fact that deep asphyxia is avoided by the gas, the ether being turned on from a separate compartment in the same instrument and one is able to grade the amount of the ether. The method is further very rapid, consciousness being lost in an average of seventy seconds and secondary anesthesia being assured within three minutes. The disagreeable preliminary sensations of ether are done away with and the patient is ready for operation within a remarkably short time. Another advantageous feature of this American-made instrument is the fact that it is not bulky like its English competitor.

Nitrous oxide alone will undoubtedly keep its place as the anesthetic in dental work and in operations of short duration. Owing to the greater rapidity with which the phenomena of nitrous oxide make their appearance, there is greater difficulty in arranging them into groups or stages; they nevertheless occur, and a very deep narcosis with absolute loss of rigidity can and does take place; so that if the patient exhibits rigidity during an operation with nitrous oxide it can be put down to the fact of an incomplete narcosis. On the other hand a complete narcosis with gas being a very difficult matter and the asphyxia being alarming, it is always good advice to give the combination of either oxygen or ether where thorough relaxation is desired.

Chloroform is no longer the popular anesthetic it used to be. Experiments have recently proved that there is accompanying its administration a state of vasomotor dilatation which is apt to end in vasomotor paralysis if the drug is either carelessly given or the patient's arteries have at all the slightest tendency to an atheromatous condition. Therefore it is well to place the importance of the vasomotors on a par with the heart and insist on the thorough examination of the vessels with the sphygmograph. The sudden deaths we hear of during chloroform administration are due to this dilatation of the vessels; as described by Hare, the patient will bleed into his own veins. Chloroform in combination with other anesthetics, such as the A.C.E. mixture and the Schleich mixture, is open to the same objection, and it is for this main reason that the latter has been practically discarded since its introduction in 1897. Personally, since I brought it to this country and used it extensively for a year, I have every word of commendation for its use as I never had a bad result. The dissatisfaction that others have experienced can be explained in three ways: (1) Because men who had very little experience judged from a few cases. (2) Because some who might have used it, did not, condemning it on general principles, because they were averse to mixtures. (3) Because experiments were made with the petroleum ether which one observer stated to be lethal on administration to rabbits. The objections were refuted in one way and another, for the combination was only a mixture in the sense that the ether was in excess; the chloroform however was proved to be in perfect solution. Then the fact of its being a poison is true of any anesthetic pushed to the lethal dose; Schleich decidedly disproved its poisonous effects in small doses and held that the reason he used it in his mixture was because he found by experiments on animals that no other ethereal substance could be administered in such large doses without causing serious disturbances. Also it seemed to mitigate the action of the chloroform contained in the mixture and to dilute the other substances without interfering with their action. The new idea brought forth in this anesthetic by Schleich,

which is rational and needs further investigation, is the relation of the boiling point to the temperature of the body. It must be admitted that a narcotic with a boiling point of 15° C. (ethyl chloride) or one which boils at 65° C. (chloroform) must act in different ways on an organism the temperature of which is 38° C. Schleich found that when the boiling-point is higher than the temperature of the body the amount necessary to narcotize is less than when the boiling-point and temperature are equal. Again when the boiling-point is higher than the body temperature the deeper the narcosis. It is clear that a narcotic which rapidly evaporates is rapidly eliminated by the respiratory organs, and one which does not evaporate as quickly, remains longer in the system and becomes more dangerous with prolonged inhalation. I firmly believe that if we can in the near future adapt the principle of the relation of the boiling-point to the temperature of the body with the anesthetics we possess to-day we would see less alarming results. It has certainly been proved possible to change the boiling-point of any anesthetic to the desired degree, but the practice has not been carried out with any single anesthetic like ether which has a boiling-point of 34° C. Ethyl bromide exemplifies the foregoing principle, it possesses the relative degree (38° C.) and as a result we have an anesthetic which is quickest in action of all the other vapors and from the effect of which one recovers most rapidly. Schleich recognized this, but found that its inhalation was accompanied by bad effects due to the bromide. That point can be remedied by careful manufacture and Squibb furnishes the proper product. This anesthetic is especially useful in throat operations; one can obtain its effects in from twenty to forty seconds. The entire quantity, 10 to 20 grams, is poured on the mask, which should be tight-fitting (paper and towel). Note on administration the relaxation of the muscles of the neck and arms; when the pupils of the eyes, which are open, dilate and the conjunctiva begins to suffuse it is time to stop the administration. I shall later have occasion to publish my results in the use of this anesthetic.

Ethyl chloride has been used some in this country, alone and in combination with ether; its patronizers have been few and their reports have not yet been sufficiently encouraging. It is a proper moment here to urge the simplification of apparatus for administering anesthetics, especially that used for nitrous oxide and oxygen, in which I see a great future as the "twentieth century" combination. Who knows that before long the gases will entirely replace the vapors like ether and chloroform, which are no doubt more apt to injure the structures with which they come in contact. At present we must be content with nitrous oxide and ether which when given with the Bennett instrument represents the ideal form of up-to-date anesthesia. It is here noteworthy to remark that the amount of ether used is a great saving over the older methods, 3½ to four ounces sufficing for an operation lasting an hour.

In conclusion, I should like to urge the fact that too much stress cannot be laid on professional anesthetization—the employment of the specialist to administer the anesthetic, for, besides giving the operator, the family, and particularly the patient absolute confidence and comfort, it will certainly tend to efface bad results from unskilled work, thus establishing in this country an incentive to the growth of the "specialists in anesthesia" that will make them a distinct and representative body.

THE PHYSIOLOGY OF SLEEP.

By H. H. STONER, M.D.,
OF ROCK RAPIDS, IA.

MANY ingenious theories have been advanced from time to time to explain the peculiar phenomena of sleep. The thyroid gland was at one time believed to possess the function of inducing this state. It was again attributed to pressure by fluid in the ventricles of the brain. Another hypothesis claimed that it was due to blood-pressure at the base of the brain. The theory, however, which at the present time claims the greatest number of advocates, is the cerebral anemia theory. During the period of sleep the brain is observed to contain much less blood than during the waking state, and investigators have rashly jumped to the conclusion that inasmuch as cerebral anemia and the period of sleep are coincident the phenomena of sleep might be rationally attributed to the diminished blood-supply.

The erroneousness of this conclusion is evident in those who have lost vast quantities of blood. Here the brain, as well as every other organ of the body, is highly anemic and yet there is no disposition on the part of the subject to sleep. On the contrary he exhibits every aspect of restlessness; he tosses from side to side in his bed; his eyes stare as in delirium; he moves his limbs about constantly; drops of perspiration stand out on his body and he feels that death is impending. If a diminished quantity of blood in the brain is the cause of sleep such a patient should feel a sense of drowsiness instead of the symptoms above described.

Recent discoveries in the anatomical construction and the physiological action of the nervous system give a clearer insight into the manner in which sleep is produced. Histologists have thought to demonstrate that the processes of associated nerve-cells are not united by anatomical union, but that they lie an appreciable distance apart and are brought into functional relation with each other in consequence of the impact of a stimulus. Thus, an impulse in passing from one nerve-cell to another is not accomplished as a continuous stream; it must halt at

the terminus of the axone process of the initial cell and effect a functional approximation of this process with the dendritic processes of its associated cell. The current may now pass into this secondary cell and so on until in like manner it finally reaches its destination. The nerve-cell with its dendritic and axone processes is now called a neurone. The two sets of processes usually arise from opposite poles of the cell. The dendritic processes take up the stimulus and convey it to the nerve-cell, whence it is transmitted to the axone process. The nerve current now passes along the axone process (also termed axis cylinder) to its terminal arborizations, which by the force of the stimulus is made to extend and come into functional relation with the dendritic processes of the next neurone in order, and so on in like manner is the means provided for the passage of the current over the various segments of the nervous chain. In this way a nervous impulse reaches the psychic elements of the brain.

It is manifest that should the stimulus fail to produce a functional approximation of the processes of associated neurones the current could pass no further and would necessarily fall short of the psychic precincts. The cerebral cortex furnishes the terminus of the sensory and the origin of the motor tracts. There are in the cerebral cortex, however, millions of neurones which are neither strictly sensory nor motor in function. They are the neurones which take part in purely psychic processes. A stimulus falling upon those psychic neurones disarranges the relative position of their processes which results in the production of a feeling which is interpreted as a sensation. Sensation, as every one knows, is the foundation upon which all psychic phenomena are built. Memory, revery, imagination, reason, etc., all have their fountain-head in sensation. Every psychic process being dependent upon sensation for its manifestation, and sensation depending as it does upon the make and break movement of neurones, both sensory and psychic, it becomes readily apparent what result would follow a failure of the processes of these neurones to meet in functional relationship. The *ego* would be utterly oblivious of the surrounding world. The phenomena of sleep I believe to be due to an inability on the part of the processes of the psychic neurones to be extended so as to bridge over the hiatus between them and so to carry on the functions of intellection. This occurs as the result of exhaustion of the cell of the neurone.

Dr. Hodge, in experimenting upon the nervous system of swallows, found that after a hard day's work the histological structure of the nerve-cells of these birds became profoundly modified. The nucleus became shrivelled and displaced, the cytolymph—the food product of the cell—in part or wholly disappeared, and the reticulated meshwork on which depends the mobile qualities of the processes lost its irritability to a degree more or less limited. As a result of these changes the neurone is necessarily incapacitated more or less for the performance of its function.

The cell of a neurone, like any other cell, cannot go on continually in the performance of its function; it must occasionally cease from its labor and repair the loss it has sustained during its period of activity. The period of rest and recuperation of the cells of neurones, especially of those which are implicated in psychic processes, corresponds to the period of sleep of the individual. During every moment of the waking state the psychic apparatus is shaken by the stimuli to which it normally responds. Sensations, both common and special, are continually pouring in upon it, the ratiocinative processes now hold sway, and again the mind is occupied in the promulgation of volitional mandates, so that at the end of fourteen to eighteen hours of this incessant mental turmoil the cells of the psychic neurones are so far exhausted that they no longer readily respond to the stimuli of the environment. It is with difficulty that the processes are now made to extend and close up the gap between related neurones. Stimuli which ordinarily awaken the psychic apparatus into activity now fail to find their way into its precincts. The processes of the psychic neurones fall so far asunder that ordinary stimuli cannot cause them to meet in functional relation. The recuperative processes in the neurone then begin. Constructive metabolism takes up the process of removing the worn-out particles of the cell and of replacing them with new material. While this process is going on the neurone is absolutely dead to the outside world; its processes are so far retracted from others of its kind that outside stimuli cannot find their way to it.

The individual is now said to be asleep. His auditory centers no longer respond to sonorous waves; his common sensory neurones are no longer capable of transmitting stimuli to the center, and, save a few isolated areas of psychic neurones which keep up a feeble flow of thought known as dreams, the whole nervous system is in a state of functionless abeyance. This state prevails until such a time as the nerve-cell has been restored to its wonted activity, when its processes gradually become again extended, the ordinary stimuli of the environment now cause the processes to come into functional approximation with each other and the sleeper awakens. He now arises from his couch fresh and buoyant; problems which to him were insoluble the previous evening now clear up with astonishing lucidity; conclusions which appeared rational when he went to bed are now seen to be monstrous vagaries. He is now thinking with a refreshed and invigorated brain; his thoughts flow freely without any apparent effort and instead of the pessimistic views of the evening before he now sees the world in all its roseate aspects.

If the theory herein expounded is correct, and there is evidence upon every side to prove that such is the case, then sleep, instead of being the result of an outside influence exerted upon the brain as a whole, is due to metabolic changes which take place in the body of the nerve-cell as the result of normal fatigue.[1]

CLINICAL MEMORANDUM.

AN ATTACK OF URTICARIA OCCURRING IN THE TROPICS SIMULATING ANGIO-NEUROTIC EDEMA.

By JACOB S. GREEN, M.D.,
OF CENTRAL AMERICA.

MR. D. came to me for treatment for what he called "prickly-heat." He complained of an intense itching and desire to scratch his entire body. This attack he said had suddenly come on the day he consulted me. The patient was a well-developed man, twenty-three years of age, plethoric, and had been taking very little exercise, whereas formerly he had exercised a great deal. Upon examination I found his face, body, and limbs covered with wheals of irregular shapes and various sizes, the largest being as large as a ten-cent piece. His temperature was 38° C (100.4° F.) and there was a slight gastrointestinal disorder. He informed me that for a few days previous he had been indulging in claret wine with his meals, which was contrary to his usual custom at the table in the tropics. I advised a farinaceous diet and instructed my patient to take Epsom salts for a few days before breakfasting and to bathe his body with bay-rum. The next morning he returned to me with an increase of symptoms. I found the genitalia edematous, without pain on pressure, and the itching was more intense than on the day previous. I advised bathing the body with spirits of camphor. In the evening I was called to see him and found him in bed with his face swollen and particularly the eyelids and lips. He could hardly open the former and the latter he said felt very thick. The next morning all traces of the swelling of the genitalia and face had entirely disappeared, but the urticaria was still troublesome, it being relieved whenever he used the spirits of camphor. His hands were then very much inflamed and burned and itched greatly. His feet were in a like condition. I inquired into his family history regarding angio-neurotic edema but found it negative. I kept him on a light unstimulating diet and purged him freely. The next day he was much improved and had but a few wheals on his body. On the fifth day my patient was better. During no time was his temperature above 38.5° C. (100.5° F.), and the itching was always worse at night, in fact being so bad as to interfere greatly with his sleeping. The climate at that time of the year was very warm and the atmosphere very humid and oppressive. These conditions combined with a full-blooded temperament of the patient, excited to a higher pitch by alcohol, a meat diet, and a lack of exercise no doubt in this case produced the vasomotor disturbance.

[1] Those on the extremeties had entirely disappeared. The genitals were free and did not longer require any lotion although there was slight irritation. The eruption on the body which diminished hourly in extent continued to be somewhat irritable.

MEDICAL PROGRESS.

Amylen Hydrate in Diabetes Insipidus.—W. Niessen (*Therap. Monatshft.*, August, 1900) relates the case of a patient suffering from polyuria who was given amylen hydrate for insomnia with the unexpected result that the symptoms of his disease at once retrogressed. Following an extensive trial, the author concludes that small doses in many cases bring about a temporary improvement in the polyuria and polydipsia and, in a few, a permanent cure, thus making this drug, among the many others, worthy of consideration. The only drawbacks are the disagreeable taste and the insolubility of amylen hydrate which can be obviated by ordering it in capsules, to be followed by a glass of beer or wine.

Secondary Hemorrhage Following Use of Suprarenal.—The gratifying results which have attended the use of the suprarenal extract in intranasal surgery have made the introduction of this drug most rapid and its use, undoubtedly, a permanent one. After considerable experience, however, it has been found by many specialists that there is an important danger to be avoided in the matter of a secondary hemorrhage. F. E. Hopkins (*N. Y. Med. Jour.*, August 25, 1900) cites several cases in which he has had serious results from two to six hours after the use of this drug in nasal operations and also gives reports from many other authorities who have had similar experiences. Although the simple spraying of the nose with a suprarenal solution in cases of acute rhinitis has sometimes been followed by a secondary congestion even worse than the primary condition, this is a rare exception and the author believes that the serious secondary hemorrhages occur in those cases in which cocaine and the suprarenal extract have both been used. It would seem that the powerful stimulation to contraction of the swollen mucous membrane, induced by the suprarenal extract, while equal to retaining a grip on the dilated vessels for a time, is unable to prevent indefinitely the paralytic stage following the use of cocaine. He suggests therefore that the nasal fossæ should be carefully packed after each operation and, to be safe, an astringent should be employed.

Treatment of Diabetes.—An anonymous original article appears in the *Practitioner* (August,

1900) upon the methods of treatment of diabetes mellitus pursued by many of the leading authorities at the present time. In Von Noorden's clinic each patient is put upon a standard diet to determine what is the most appropriate dietetic treatment for each case. They are divided into three classes, one in which the sugar in the urine entirely disappears, a second in which it is lessened, and a third in which the quantity of sugar excreted is still great. The first class is then allowed more carbohydrates until the point of tolerance is reached, while the last two are put upon a gradually more restricted diet until the glycosuria disappears or their nutrition prohibits a further reduction of carbohydrates. In seven cases bicarbonate of sodium is given in large doses to prevent hyperacidity of the blood. The power of assimilation of carbohydrates is increased by periods of abstinence and patients are, therefore, much restricted in diet for a few days at regular intervals. Dieulafoy believes that in severe cases the kidneys should be flushed out by drinking large quantities of liquids and he does not object to the use of milk. He gives antipyrin morning and night and sodium bicarbonate daily. Very different views are expressed in regard to the advisability of using certain foods, which contain small amounts of carbohydrates. Dr. Hale-White believes that levulose can better be utilized than dextrose and he sometimes uses inulin, a starch corresponding to levulose. Grube notes that the use of phosphate and carbonate of lime increases the weight of the patient and makes them feel better, but has no effect upon the excretion of sugar. The hepatic extract has been found of slight value by Gilbert in some cases of liver origin. It is generally believed now that antipyrin diminishes the amount of sugar, but it should be used only in the very severe cases and only for a short time. Boracic acid has been found of use in a few cases and the prescription used was:

℞	Acid Borici.....	gr. xx
	Glycerini	ʒi
	Liq. Arsenici Hydrochlor.....	♏ v
	Liq. Strych. Hydrochlor.....	♏ x
	Aq. ad.....	℥i.

The thyroid extract and pancreas have proven useless. Several cases of diabetic coma have been successfully treated by the use of intravenous injections of normal saline solution. About 900 to 1200 cc. are generally used and repeated for several days if necessary. In England a seven-per-cent. solution of sodium chloride is used and four ounces in twenty-four hours have been known to be successful. If the patient is not in full coma, subcutaneous injection is usually better. Dr. Hale-White believes the rationale of this treatment to be that the toxin or poison is diluted by the saline injection.

Uterine Adnexa in Fibromata.—Greio (*Archivio Italiano di Ginecologia*, No. 2, 1900) draws the following conclusion on this subject: (1) In fibroma of the uterus, the tubes and ovaries are always altered, even though it may be but microscopically; there is always a hyperplasia of the muscular fibers and of the mucosa; sometimes only the mucosa is involved; this hyperplasia is of the same nature as the hyperplasia of the uterine mucosa. (2) From these alterations are often due the catarrhal and inflammatory processes in the tubes and ovaries. (3) There may also be an atresia of the tubes due to the tumefaction of the mucosa, or a diffuse adhesive inflammation; cysts are often found, associated with uterine fibromata, due to changes in the Wolffian bodies, or to a dilatation of the lymphatics. (4) Ovarian alterations, macroscopically, consist of a slight enlargement, with the presence of small cysts, which may or may not contain pus. The histological alterations in the ovaries consist of dilatation and obliteration of the blood-vessels with a hyaline degeneration of their walls and a proliferation of connective tissue stroma; these alterations produce a diminution of the primordial follicles, and a miscroscopic degeneration and atresia of the vesicles of Graaf, with the formation of fibrous bodies. (5) Uterine fibromata influence the adnexa mechanically by interference with the blood-supply, due either to direct pressure or indirectly by torsion, as in pedunculated tumors, causing a stasis of blood in the uterine adnexa; this stasis may extend to all the contents of the pelvis, causing a concomitant endometritis or a chronic inflammation of the peritoneal cavity. (6) It is well to remember that ectopic gestation may occur in uterine fibroid conditions and must be differentiated from the real alterations in the adnexa.

Thyrotomy.—F. Semon (*Lancet*, August 11, 1900) says that the laryngoscope and internal laryngeal surgery have for many years supplanted external thyrotomy, especially in two of the latter's indications, namely, the removal of foreign bodies and the ablation of benign growths. In fact authorities like Professor Paul Bruns prefer internal laryngeal means even for malignant neoplasms. Improved technic both of the operation itself and of the after-treatment has done away with most of the objections which previously had to be admitted as in force. All indications for an operation are facultative when another and compulsory where no other method may be substituted. Under these two categories the indications of thyrotomy may be regarded (1) foreign bodies in the larynx; (2) injuries to the larynx; (3) laryngocele; (4) stenosis of the larynx; (5) acute laryngeal perichondritis; (6) laryngeal tuberculosis, including lupus; (7) scleroma of the larynx; (8) benign; (9) malign new growths of the larynx. Foreign bodies should always be removed when possible by the natural path. When this is not practicable we have at disposal tracheotomy, dislodgement through the wound or from above or through a thyrotomy. Each case is a law to itself, the kind, site, impaction of the body and the result-

ing symptoms determine what shall be done. Injuries of larynx may be repaired, fragments ablated or apposed and maintained in apposition by a thyrotomy. Laryngoceles or air-cysts of the larynx are very rare and still more seldom do they cause dangerous symptoms, but in such circumstances would be a reason for thyrotomy. Laryngeal stenosis due to tuberculous or syphilitic ulcers or scalds and burns of the mucosa, fractures, adhesions inflammatory or congenital, malformations, etc., will readily be managed by a thyrotomy. Certain cases may be handled by dilation with O'Dwyer's or Schrötter's tubes or by intralaryngeal approach, but in the main freedom of access is gained by the open method. Acute laryngeal perichondritis, especially when abscess and necrosis ensue, is readily treated thus because evacuation of pus, removal of necrotic tissue, drainage and after-treatment are so readily carried out. Tuberculosis of the larynx, including lupus, yields good results to thyrotomy when the general strength of the patient is good, very poor results when the systemic disease has gone far. Hence the latter condition is an absolute contraindication of it. Another difficulty is the frequency with which the wound itself becomes a tuberculous sinus and requires much after-treatment to cure. Scleroma of the larynx is very rare. Thyrotomy followed by systematic dilatation should relieve or cure. Benign and malign neoplasms are very likely the greatest field for this operation, because it gives wide exposure and free field.

Koplik's Spots and Measles.—Koplik's spots consist of irregular spots of a bright red color, with a minute bluish-white speck in the center of each, which appear on the buccal and labial mucous membrane during the invasion of measles from twenty-four hours to five days before the cutaneous outbreak and fade away as the skin eruption reaches its height. These spots vary in diameter from 0.2 to 1 mm. and are found to consist of bacteria and epithelial scales. They cannot be removed by rubbing with the finger. At first there may be only from one to six of these spots, but they may increase in number until they cover the whole inner surface of the cheeks and lips and coalesce so that the whole buccal mucous membrane becomes of a uniform red color studded with myriads of these bluish-white specks. The combination of a bluish-white speck in a rose-red spot is absolutely pathognomonic of the invasion of measles. Jose L. Hirsh (*Phila. Med. Jour.*, August 25, 1900) says that the diagnostic value of this sign does not seem to be generally appreciated. He thinks these spots on the buccal mucous membrane are alone significant and pathognomonic of beginning measles, and says that, although he has never been able to see them with an artificial light, they are easily visible in strong daylight. He says that this characteristic eruption can be easily distinguished from all other eruptions occurring in the mouth by the peculiar bluish-white speck which is in the center of each red spot. The absence of Koplik's spots precludes the diagnosis of measles, while their presence as surely establishes the invasion of measles. The writer cites some interesting statistics by a number of investigators. He has found these spots present in every one of between forty and fifty cases of measles, but never in cases of any other disease. He reports in detail five cases which showed these spots and had measles; two cases in which the absence of Koplik's spots caused another diagnosis to be made which was afterward confirmed; one case of measles, in a colored boy, in which the presence of Koplik's spots was necessary for a diagnosis as the cutaneous eruption was atypical and hard to see; and a case in which the spots were present during the invasion of a second attack of measles. By this sign measles may be diagnosticated from one to five days before the cutaneous outbreak. Hirsh presents the following conclusions: (1) An eruption, limited to the buccal and labial mucous membrane and characterized by the presence of irregular red spots with a bluish-white center, is always present in beginning measles; (2) these spots are present from twelve hours to five days before the cutaneous outbreak; (3) the number of these spots bears no relation to the severity of the attack; (4) these spots will be found in no other condition of health or disease.

Carbolic Acid and Mastoiditis.—W. C. Phillips (*Med. Rec.*, August 25, 1900) says that pure carbolic acid is without peer in the treatment of suppurative conditions about the ear and its accessory channels. It may be applied with a cotton swab or by an atomizer, allowed to remain *in situ* thirty to sixty seconds and neutralized by alcohol. Under its use unhealthy granulations become normal, discharge ceases and often secondary operations are avoided.

Ichthargon.—This is a combination of ichthyol with a silver salt, which, according to L. Leistikow (*Monatshft. f. prakt. Dermatolog.*, August 15, 1900), is especially to be recommended in acute anterior gonorrhea since it possesses to a marked degree the antiphlogistic and antiseptic properties of its component parts and at the same time is no more irritating than the ichthyol alone. It can be had in the form of a dark brown, odorless powder, readily soluble in water and containing 30 per cent. and 15 per cent. sulphur in combination. In drawing conclusions from the numerous cases the author cites in full, it appears that in many cases ichthargon acts as an abortive; at all events a cure is reached in a remarkably short period and the disease is not prone to be complicated by other inflammations. It is not necessary to resort to the expectant plan of treatment at first, but injections, varying from 0.02-0.2 per cent. in strength, may be employed with success from the very onset. The author earnestly solicits a more extensive use of the drug by the profession.

Tumor Albus.—The common synonyms of this term, says F. E. Peckham (*Med. Rec.*, August 25, 1900) are white swelling and tuberculosis of the knee-joint. The important early symptoms are heat, swelling, tenderness, distention, bogginess in the absence of fluid, depression of the patella by swelling of tissues about it. When the joint is opened this is found to be due to the accumulation of a peculiar gelatinous material within the cavity whether fluid is present or not. The inner condyle of the femur is apt to be the more involved. This produces a condition simulating knock-knee, if at all marked. Lameness next appears and may at first be intermittent. With increasing irritability the flexor muscles become slowly contracted and then flexion and subluxation ensue and are characteristic deformities. Muscular atrophy distal and proximal to the joint becomes manifest. Locally temperature is appreciably elevated. By stimulation of the epiphyseal growth sometimes actual lengthening occurs for a time. Pain appears early and becomes greater and greater if treatment is delayed. Then appear anxiety, loss of flesh and strength, fever, anorexia, etc. This important disease is to be differentiated from synovitis, rheumatism, rheumatoid arthritis and hysterical joints. Synovitis, especially if the body resistance is lowered, is difficult to eliminate, but the patella here floats on fluid, is not surrounded nor covered by a boggy mass and hence strikes the femur with a distinct click. Motion is not much interfered with. Atrophy is absent. Acute rheumatism has a sudden onset with fever and more than one joint may be affected. Chronic rheumatism is clinically sometimes impossible to differentiate. In rheumatoid arthritis the bony spindle-form joint enlargement and the distinct bony crepitus due to erosion of the joint surfaces and the presence of the disease in several joints make up its salient features. Hysterical joints may be recognized only after watching the case. The treatment comprises conservative fixation, rest and protection, with tonics and fresh air, radical opening and scraping of the joint, excision in bad cases, amputation as a preservative of life.

Etiology of Anosmia.—The central course of the olfactory fibers is as yet too imperfectly known to allow one to localize the tracts and centers which control smell, hence the factors which cause disturbance of this sense cannot always be determined. A. Onodi (*Klin. therap. Woch.*, August 12, 1900) finds it convenient to divide anosmia into essential or true, mechanical or respiratory and functional. The first mentioned may be centric or peripheral and among its causes may be mentioned influenza, syphilitic processes in the nose, polypi, chronic ethmoiditis and atrophy of the mucosa for the peripheral types. Brain tumors located in the interior fossa, cerebral abscess, hydrops of the ventricles, syringomyelia, progressive paresis, cerebral tabes and senile atrophy, for the centric, are most common. The second group includes all those forms in which there are mechanical impediments to respiration; such as atresia of the choanæ, deviations of the septum, etc. Functional anosmia generally depends on hysteria, but may occur reflexly during menstruation, after removal of the Gasserian ganglion, cauterization of the inferior turbinated or ovariotomy. Parosmia and kakosmia may precede any form of anosmia.

Roentgen-Ray Errors.—In treating of the use and interpretation of the skiagraph, Carl Beck (*Med. Rec.*, August 25, 1900) says that its advent into the hands of surgeons has revolutionized at least the diagnosis of fractures. After an experience of nearly three thousand cases he has found dermatitis of rare occurrence and always due to some trophic disturbance in the individual. He has had two instances of circumscribed depilation, due to frequently repeated necessary exposures. The hair returned within a month. To interpret a skiagraph properly appreciation must be at hand of the facts that one is dealing with photographs of shadows and that each tissue casts one. Muscles and tendons have a large share in the difficulties of interpretation. The carpus, as an example, is especially apt to produce errors, the tuberosities of the trapezium, scaphoid hamulus ossis hamati, os pisiforme, eminentia carpi volaris and ulnaris double the thickness of the carpus, cause dark shadows and might lead to error. The foot is easily skiagraphed in the direction from the dorsum to the planta pedis as far back as the upper third of the metatarsus. Farther back the cuneiform and scaphoid and other tarsal bones bring in difficulties, so that lateral views must be taken to substantiate the other. Thus the astragalus, calcaneum, cuboid, scaphoid, fifth and fourth metatarsal bones are brought out clearly. Knowledge of the normal sesamoids is also essential in order not to be drawn into error by their presence. The os trigonum tarsi has also been the source of much difficulty and one must be prepared to meet it rather frequently. The practitioner must also be aware of the various other common anatomical abnormalities. A normal semitendinosus sesamoid bone occurs in 8 per cent. of all cases. The significance of the skiagraph in estimating the amount of functional disability is not always conclusive. Bony deformity may be present without marked or in fact any loss of function, in fact where function is perfect the union may be skiagraphically imperfect. On the other hand, marked depreciation of the use of a limb may occur by injury of the soft parts, whereas the skiagraph may be negative. Joints offer the next obstacle. The more complicated the joint the greater the difficulty and the more emphatic the indication for examining both sides. Old fractures can often not be diagnosticated, unless displacement and callus exist. Intra-articular fractures are especially difficult because the callus may hide the line and the joint complexities add still more to the problem.

Here again the normal opposite side should be skiagraphed and often the comparison of these with a skeleton will be essential to clear knowledge. In children and adolescents the years at which the epiphyo-diaphyseal bony union occurs must be known, together with the ossified bones at birth and the relation such diseases as rickets bear to ossifications and union. Foreign bodies require a skiagraph for each axis. A needle seen end on would appear as a point and be overlooked, side on as a narrow black shadow one inch or more long. In order to be of legal value the skiagraph must have records with it of the source of the current (battery, static machine or street), of the length of the spark of the induction coil, of the intensity of the tube, of the distance of the platinum disc of the tube from the plate, of the position of the object, of the kind of plates and of the time of exposure, together with full clinical and anatomical data.

Coating of the Tongue.—Although the modern physician attaches much less importance to the condition of the tongue than was the case formerly, and although a uniformity in the extent and character of the furring is hardly to be expected even in disease of the gastrointestinal tract, as an aid to diagnosis the tongue should not be overlooked or its appearance regarded as unimportant. J. Müller (*Münch. med. Woch.*, August 14, 1900) finds that but few healthy persons can boast of a perfectly clean tongue; in the majority a thick or thin deposit is found in the center and along the posterior portion, leaving the edges free. This more or less normal condition is not dependent, however, so much on a true coating but is caused by enlargement of the filiform papillæ whose surfaces are in constant desquamation. Between these papillæ mucus, epithelium, leucocytes and remnants of food, together with an extensive bacterial flora, are found. This forms the true coating which can readily be scraped off with a knife, leaving, however, in most cases a much more extensive fur consisting of papillæ, which cannot be removed. In disease the furring is most marked if the attack be acute, whether or not it be located in the alimentary canal, while in chronic digestive troubles the tongue is often no more coated than in health. An examination of the scrapings showed that they did not differ from those in health except that in gastric cancer and in pulmonary tuberculosis many leucocytes were found. The author believes that several factors produce the furring of disease. Owing to the diminished amount of food the patient takes the tongue is less frequently cleaned by the mechanical act of chewing. Also the mouth is often the seat of a desquamative catarrh which permits of an increase of the epithelial elements of the fur. To decide whether the condition of the tongue is normal or pathological it is best to scrape off part of the fur; in the latter case, much more can be detached than in the former. As far as therapy is concerned, the removal of a healthy fur is not to be practised since it will dispose to more marked deposition. In disease, however, it is best to clean the tongue with a dense and soft toothbrush which can reach the posterior portions.

Foreign Body in the Bladder.—J. H. Morgan (*Lancet*, August 11, 1900) describes a case of foreign body in the bladder consisting of a clinical thermometer. Had an X-ray photograph been resorted to the nature of the nucleus of the stone would have been found for both glass and mercury are very opaque to the rays. Foreign bodies are found oftener in the female than in the male bladder, probably on account of the shorter urethra and of the more frequent occurrence of hysteria. This patient had lumbar and hypogastric pain, alkaline, low specific gravity, purulent urine, slight rise of temperature at night, dysuria and frequency of urination. The treatment was irrigation with boric acid twice daily and boric acid and ammonium benzoate internally. Later lithotripsy when the nature of the stone was revealed. Recovery was complete.

On Epistaxis.—W. Lamb (*Birmingham Med. Rev.*, August, 1900) gives an excellent account of the arterial supply of the nose and dwells on the difficulties of checking hemorrhage owing to the vascularity of the cavity which is dark, full of recesses, difficult of illumination and freely open at both ends, while the lining membrane, especially that covering the lower turbinated body, resembles the erectile tissue of the corpora cavernosa. Constitutional diseases, with a tendency to hemorrhage or conditions of increased blood-pressure, may result in epistaxis, but most common are erosions of the mucous membrane of the septum, especially at its lower and anterior part, about half an inch from the entrance of the nostril. The reason for this is that this spot is most exposed to injury by the finger-nail when it is used to pick off the adherent crusts which form in the dry varieties of rhinitis. Bleeding from the upper and anterior regions is much less common and is generally associated with congestive head symptoms. In the treatment of epistaxis, the first point to decide is whether any treatment is needed. Patients in whom the epistaxis has relieved head symptoms should be allowed to bleed moderately. In other cases plugging the lower meatus and thus compressing the whole length of the inferior turbinated body is best. Plugging the posterior nares with Bellocq's sound is an operation which should be reserved for cases bleeding from the nasopharynx. Erosions of the mucous membrane may be touched with the galvanocautery at a very dull red heat. A chemical caustic which the author has effectually used to check bleeding is common precipitated sulphur. When applied to raw surfaces it forms sulphurous acid which exerts its powerful effects efficiently upon the tissues without causing any pain. Hot water, peroxide of hydrogen, and suprarenal ex-

tract may be tried; calcium chloride should be given internally in hemophilia, and turpentine in purpura.

The Pathology of Diabetes.—Although the true cause or causes of diabetes are very uncertain and indefinite, the malady is one in which experimental physiology is of great assistance in determining the nature of the condition, for artificial diabetes can be caused in a variety of ways. The recent experimental work is reviewed by J. R. Bradford in the *Practitioner* (August, 1900). The fundamental fact in the pathology of the disease is that the blood contains an excess of sugar which may theoretically be due to a number of causes: (1) Too great an ingestion of sugar so that the liver is unable to arrest it, either on account of the amount taken in or because of a functional derangement of the liver. (2) The excessive formation of sugar. It is believed by some that the liver is a sugar-forming organ as well as sugar-stopping, and that it can, perhaps pathologically, make sugar out of proteids and possibly fats. Thus this form of diabetes could not be entirely controlled by the amount of carbohydrates ingested. (3) Disturbances in the functions of the pancreas. Some contend that there is an internal secretion by the pancreas which assists in the oxidation of the sugar by the tissues. In favor of the first view are the many cases which have a glycosuria without many symptoms and which clears up when the ingestion of carbohydrates is controlled. In such patients it is possible that the maltose is converted into dextrose too rapidly for absorption by the liver or the liver-cells may be so deranged that they fail to arrest a normal quantity of dextrose and convert it into glycogen. In regard to the second explanation—that the glycosuria is due to hepatic trouble—it is abundantly proved that it may occur under nervous influences, inasmuch as a number of experimental lesions of the nervous system are capable of producing glycosuria. The passage of arterial blood through the portal vein has the same effect. Recently lesions of the pancreas have been proven to be efficient causes of glycosuria. It may be produced by extirpation of the whole gland or ligature of the pancreatic veins and it is now well known that the gland has an internal secretion the absence of which is followed by glycosuria. Lepine explains the phenomenon by saying that the pancreas produces a glycolytic ferment which is essential to the metabolism of sugar and prevents its accumulation in the blood. The pancreas is also supposed to secrete some important element into the lymphatic system for ligature of the thoracic duct also produces glycosuria, but it has been found by Gaglio that excision of the pancreas does not cause diabetes after ligature of the thoracic duct. A fairly satisfactory explanation of pancreatic diabetes is that the pancreas secretes into the lymph-stream an internal secretion capable of neutralizing a toxic body which is continually being absorbed by the intestine and which can in itself produce a glycosuria. It is thus necessary to suppose that the intestinal toxic substance is absorbed both by the portal and lymphatic systems.

Malignant Disease of the Stomach and Pylorus.—W. J. Mayo (*Annals of Surgery*, August, 1900) says that age has a more important bearing on carcinoma of the stomach than on the same disease in the lower portion of the gastro-intestinal tract; in the former locality it is peculiarly a disease of middle and later life; under thirty it is most rare. The progress of the disease varies greatly and is materially affected by the age of the patient, the situation of the growth, and its histological structure. Death may follow in three months from the first symptoms, or it may be delayed to two and one-half years—the majority die within the year. A suspicion of gastric cancer should cause the physician to send the patient to a surgeon for exploratory incision to complete the chemical examinations already supposedly made in a suspicious case; the same principles should govern here as in probable malignant disease of the breast or uterus. In a general way it can be said that the early medical diagnosis of cancer of the stomach does not depend on any specific sign or symptom, but rather on a collection of facts, each one of which, if taken alone, would have but little value; moreover, most of the symptoms are not developed to a characteristic extent until late. If a person of middle or advanced life of previous good digestive power begins to complain of pain in the region of the stomach, difficult digestion and loss of appetite, with a progressive loss of flesh and strength, with more or less vomiting, cancer of the stomach is to be suspected; unfortunately if all these symptoms are present, the probability is, that it is too late for a radical operation to be of any lasting avail. The curability of cancer of the stomach depends on the histological structure of the neoplasm; its location; extension to neighboring structures; lymphatic infection; and the general condition of the patient. Prompt and early radical surgical treatment affords the only check to the ravages of this dread disease.

Disease of Upper Air-Passages and Diphtheria Bacillus.—Evidence that a single organism may under certain circumstances be capable of producing widely differing disease states is rapidly accumulating and a series of five cases reported by Neisser and Kahnert (*Deutsche med. Woch.*, August 16, 1900) seems to confirm this already suspected property in the diphtheria bacillus. The patients in question suffered from a well-marked degree of atrophy of the mucosa accompanied by hypertrophy of the follicles and oversecretion of thick, stringy mucus which exhibited a tendency to desiccation and the formation of crusts. The lining membrane of the nasopharynx, pharynx and upper larynx, was invaded in all the cases which also were characterized by resistance to

treatment and spontaneous remissions in summer. Subjectively dryness of the throat, pain and hoarseness were complained of. On bacteriological examination the secretion was found to be rich in organisms which apparently were true diphtheria bacilli and an antitoxin reaction could be obtained from the blood.

Gastric Carcinoma Simulating Esophageal Stenosis.—In this case, described by R. Schütz (*Deutsche med. Woch.*, August 16, 1900) a dilatation of the lower portion of the esophagus served to supplement the diminished receptive capacity of the stomach which was greatly contracted owing to a malignant growth starting at the pylorus and invading nearly the whole wall. The anamnesis was very atypical inasmuch as there had never been vomiting or any symptoms pointing to a secondary dilation and a gradually increasing dysphagia first for solids and later for fluids seemed to locate the disease in the esophagus. On autopsy it was found that although no tumor had been palpable during life the stomach had been transformed into a rigid thick-walled vertical tube while there was evidence of great relaxation of the lower esophageal wall. The peculiar position of the stomach produced through the contraction of peritoneal adhesions must be regarded as the crucial factor in the clinical picture, for owing to its vertical direction it became simply a continuation of the esophagus and although a high degree of motor insufficiency existed no dilation was produced. The seeming esophageal stenosis which had, however, never presented any difficulties to the passage of either hard or soft bougies resolved itself simply into atony of its muscular coats.

Chills in Typhoid Fever.—In southern latitudes the exhibition of chills in typhoid fever is usually considered to be due to a combination of malaria with the enteric fever. This double infection, writes W. W. Ford (*Montreal Med. Jour.*, July, 1900), may occur, but often the chills are due to septicemia either from absorption of toxic products or from the growth and development of the typhoid bacillus in the blood. A case of this kind occurred at the Johns Hopkins Hospital, showing marked Widal reaction, typhoid bacilli in the urine and in the blood, and typhoid ulcers at autopsy. The rigors were always very severe, the rise and fall of temperature abrupt, and accompanied by shaking chills and sweating. Such pronounced chills are seen only in malaria and septicemia and the former was ruled out by the constant failure to find the parasite in the blood and the lack of any lesions at autopsy associated with malaria. Chills in typhoid are usually ascribed to the more serious complications such as cerebral thrombosis, hemorrhages, or intestinal perforation. Yet none of these were present, and the finding of the bacillus in the blood corroborated the diagnosis of typhoid septicemia.

Adiposis Dolorosa.—V. Giudiceandrea (*Revista di Pat. nerv. e ment.*, July, 1900) records the case of a woman, aged forty-four, whose hereditary and personal history prior to the beginning of the symptoms was negative; eight years ago she began to have sharp shooting pains in the sacral region extending down into the left thigh; the pains at times were so severe as to require the use of morphine; these pains were paroxysmal for two years, when she noticed a falling out of her hair; about this time the pains again became acute and continued, involving now the right lower extremity as well, until three years ago the pains had involved most of the body; *i. e.*, the abdomen, the breast, the shoulder-blades, and even the hands. Contemporaneously an increased deposit of flesh was noted, first in the left buttock and thigh, and then in the right thigh; the pains always grew worse prior to a noted deposit of fat; finally the abdomen, the breasts, the shoulders and upper extremities were the seat of fatty deposits, until locomotion became painful because of these deposits and the concomitant pains. Examination showed her skin and mucous membranes to be pale; the subcutaneous tissues were found to be the seat of enormous fatty deposits somewhat irregularly situated. The thyroid gland was normal in size; there were no ataxic symptoms; reflexes were normal; tactile sensibility was marked, indeed being most painful over the areas of fleshy deposit, while heat sensibility was diminished; electric examination was normal, as was her psychic state; the heart was hypertrophied; the liver and spleen were slightly enlarged. Under continued thyroid gland administration the patient improved considerably, both as to her weight and the hyperesthesia previously existing. The author's conclusions are that adiposis dolorosa usually appears in women between the age of thirty-five and sixty years; syphilis and alcoholism are supposed to be predominating causes; traumatism may be a cause also; only seventeen cases have been recorded. The fatty deposit manifests itself in a nodular, a diffuse, or a combined nodular and diffuse form; the pains are either spontaneous or due to pressure; the pains may precede or be coincident with the fleshy deposits; pressure pains are most severe where the fat deposit is most abundant; the disturbances of sensibility are many as are those of motility, the latter being due to mechanical interference of the fatty tissue; muscular atrophy may occur from disuse. The heart, spleen and liver are usually enlarged; the temperature is generally normal; the pulse is frequent; the blood is likely to be deficient in red blood-cells; the course of the disease is usually progressively fatal, although it may be altered by organotherapy; the diagnosis is fairly easy but this disease must not be confused with myxedema, acromegaly, elephantiasis or obesity. The treatment is largely empirical, electricity, massage, tonics, baths, and thyroid extract, offering the best results thus far obtainable.

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SATURDAY, SEPTEMBER 8, 1900.

THE PLAGUE.

THE appearance of the plague in Glasgow adds another and very important port to the number already on the alarm-list of quarantine officials. The inconvenience and delay to which passengers of the "City of Rome" were subjected on its arrival after the news of the plague were trifling things in comparison with the importance of making the most rigid examination of every passenger and member of the crew of ships sailing from any infected port.

This is no summer scare to fill vacant spaces in newspapers. It is a very serious danger, but the fact that the hue and cry last November, when two cases came with the coffee cargo from Santos, soon died away, and the fact that the scare this summer will doubtless amount to nothing, must not delude the public into thinking that the health officers are "crying wolf." The scare will come again, year after year, with the deadly persistence of the *bacillus pestis* and the greatest danger is that familiarity will breed contempt, and that at some small, not too sanitary port, where the sentry duty weakens, through constant, unrecognized alarms, the plague will touch our shores and become acclimatized.

The position and commerce of the North American continent are such that every additional infected port in any part of the world threatens our shores.

Five years ago this present outburst of the plague started in India; to-day it has spread to Asia and Africa until it has reached the limits of their coasts. Hong Kong and Japan threaten us on our Western and most susceptible shore; Alexandria, the most frequented of the African plague ports, with Oporto and Lisbon and other ports in Spain, threaten our Eastern coast, especially through their commerce with South America where the plague has appeared in Rio Janeiro, Asuncion, Santos, and other insanitary cities.

At the present time the problem is not so much, what shall be done during the temporary fright this summer? but what provision shall be made in every seaport of the United States during the next ten years to guard against the pertinacity of the plague?

The plague that started in the sixth century in Egypt and which caused 10,000 deaths in a single day in Constantinople took thirty years to overrun Gaul and Spain, and the second great plague that started in China in 1334 took thirteen years to travel to Europe; but when it finally did arrive 25,000,000 died. The plague that came two years ago to Vienna, done up in test-tubes for inoculating animals, and that caused the death of the bacteriologist who experimented with it as well as of the attendant who nursed him, was immediately stamped out to the great relief of the excited Viennese; but it was an accidental and not an acclimatized outbreak. Even in Glasgow the few cases reported need not worry the British Isles just yet, for the bacillus cannot have become accustomed to the new climate and conditions. The plague will disappear from Glasgow just as it disappeared from San Francisco, but that must not cajole a too-easily-frightened people into a too-easily-won relief. The plague is a thing with the persistence of half a century in its vitality and the Government should recognize this and take precautionary measures, which, however expensive and irritating and inconvenient they may be, cannot compare with the terror and horror of the "Black Death."

These measures should be, first, the establishing of strict and efficient quarantine for a term of years at every small port, especially on our Southern and Western coasts, in Cuba and the Philippines, as well as a cooperative quarantine on the boundary of Canada, where it is trusted

the smaller ports will also be strictly watched. Second, the introduction of sanitary and hygienic improvements in crowded and unclean seaports, especially in the warmer climates. England is depending more largely on its cleanliness than on elaborate quarantine for immunity. Third, the study of how best to destroy rats, mice and fleas, both on land and sea, as these have been proved to be most pernicious carriers of the disease. Fourth, the enforcing of an absolute isolation of all cases coming from badly infected ports until the term of incubation has passed. It was a source of surprise that when the plague was raging in ports all about, Singapore remained immune, even though ships with 3000 to 4000 coolies were arriving from China; but the immunity was due not to disinfection of cargoes, which was little practised, but to the fact that all passengers were detained nine days before landing, thus giving the disease time to appear before they left the ship to scatter it broadcast. Lastly, we would recommend a careful study of the symptoms of the plague, especially of the hitherto rather overlooked preliminary symptoms of the respiratory tract, with a view to early diagnosis.

We cannot too heartily commend the active work done by the Marine Hospital Service in their studies of preventive inoculation for the plague and we confidently look forward to the time when this final means of protection shall be assured to us.

SUMMER INFANT FEEDING.

A GREAT change has come over expert opinion during these last few years with reference to infant feeding in the warm weather. Medical men who recall the enthusiasm with which the sterilization and afterward the pasteurization of milk for infant feeding were taken up by the pediatrists at the beginning of the present decade can scarcely help being surprised at the position now generally assumed by specialists in children's diseases with regard to this important matter of infantile diet. The change, we are happy to say, is not the result of caprice nor the mere desire for novelty. It represents a distinct advance in the knowledge of infant dietetics although it seems to be only a return to methods of feeding which have been in general use for a long time before science invaded the field of child food preparation.

The change is due to two principles that now seem to have been definitely established. These are, first, that the mixture of a certain amount of some cereal with cow's milk for babies' food instead of being harmful is beneficial. Second, while sterilization or pasteurization of milk does destroy all living germs in it, neither process destroys the toxins that may have been elaborated by the germs during their period of vital activity. Some of these toxic substances are very virulent. Because of them or because of some change in the milk under the influence of heat, sterilized or pasteurized milk often becomes markedly indigestible. Certain infants seem to receive no nourishment from it. It has taken a good while to realize the truth of these principles. Their acceptance however promises to be of the greatest practical importance in the nutrition of infants.

With reference to the mixture of cereals with cow's milk for very young children there are authorities on the subject, like our own Professor Jacobi, who have always insisted on the benefit to be derived from them. When it seemed demonstrated that the infant secretes no starch-splitting ferment and can therefore make no use of starchy substances, these men on the strength of their clinical observations still recommended the use of a certain amount of cereals. If they had not a chemical significance at least they were of physical import in the child, digestive economy, for it was certain that their presence greatly aided the infant nutrition. If they were not absorbed at least they served the very advantageous purpose of mechanically breaking up the coagulum, which in cow's milk is prone to be dense. At the present time there are advanced on experimental and clinical grounds additional good reasons for the employment of cereals in infants' foods.

The diastasic ferments that aid in the digestion of starch have been proved to be present at a much earlier period in infantile life than has been claimed. Even the very young infant is able to avail itself of a certain amount of starchy material. An important although hitherto unsuspected action of carbohydrates when added to cow's milk is that they decrease nitrogenous elimination. When maltose was added to the cow's milk of a baby's dietary Keller found that the elimination of nitrogen was reduced to less than one half what it was before. The striking difference between mother's milk and cow's milk as far as regards infant nutrition seems to be that while most of the nitrogenous material

absorbed by the breastfed infant is retained—a percentage of retention as high as 80 per cent. has been noted—the bottlefed infant on a diet of cow's milk alone retains very little of the nitrogenous substances absorbed—in one case only a trifle more than 5 per cent. of the amount supplied. This rule applying to the retention of important albuminous material holds also for children who are not well. In them the nitrogenous waste when on an exclusive cow's milk diet is prone to be excessive, sometimes reaching 99 per cent. of the amount ingested. The addition of a carbohydrate to the food at once reduces this waste and leads to the retention of albumins in the system.

Professor Heubner, of the Children's Clinic at the University of Berlin, arrives at a similar conclusion as to the value of carbohydrates in infant's diet from a very different method of observation. Heubner studied the complete metabolism of the infant when placed in a glass chamber connected with a respiration apparatus. As the result of his experiments he emphasizes the importance of non-nitrogenous foods because they protect the albumins from useless decomposition. Infant growth requires the retention of considerable amounts of albuminous materials in the system, but these are not retained unless non-nitrogenous foodstuffs in certain quantities are being constantly given. It seems probable that fats are as important as the sugars in preventing useless decomposition of nitrogenous substances, but both must be given to insure the retention of the proper amount of albuminous material within the child's body.

These latest conclusions of experimental pediatry seem thoroughly rational. They agree much better with the traditions of infant feeding than did the seemingly more scientifically exact regulations of a few years ago. If applied with a due admixture of common sense they will undoubtedly prove of the greatest service during warm weather. We have now come to the realization that sterilization or pasteurization may render less harmful but cannot change the character of an originally contaminated milk. What is needed for successful infant feeding is the purest possible milk, kept on ice from the time it is gathered until its distribution, and not allowed to stand in the warm air of a house for hours before being used. This, mixed with the amount of cereal in the form of barley-water or something similar that has been found to agree with the particular child and with the amount of cream that seems advisable for the special milk, and the little patient will do much to ward off the dangers of an unsuitable diet during the warm weather.

CONCERNING LAMINECTOMY IN FRACTURE OF THE SPINE.

IN spite of our progress in the past quarter of a century, we still continue to adhere with fruitless tenacity to enough antiquated and properly obsolete procedures in both medicine and surgery to arouse the suspicions that a certain amount of this progression is alarmingly crabwise.

It is certainly discouraging to think that since the operation of trepanning the vertebræ for fracture was attempted by Mr. Henry Cline, at St. Thomas' Hospital, in London in 1814, sufficient good has never come from it up to the present day to warrant the performance of it—or its modern counterpart laminectomy—except in certain cases whose number is dangerously near the vanishing point. Why, therefore, an operation so absolutely barren of results should continue to be perpetuated by generation after generation of surgeons surpasses understanding. Too often, we fear, it is undertaken on the flimsy ground that it offers the last chance. In regard to this plea we can only say that the surgeon who makes it must be woefully unmindful of his own previous experience as well as of the accumulated experience of the century, for certainly we can think of no operation in the entire category upon which we may count more surely to remove the last chance, than upon the one in question.

When we read some of the most modern writings upon the subject in which the advantages and disadvantages of laminectomy for spinal fractures are discussed with as much naïveté as if the author had embarked alone upon a tour of discovery and had penetrated to the heart of some hitherto undiscovered country, we shudder to think of how quickly even middle-aged medical writers pass into oblivion. Many years ago one of the shining lights among English essayists, William Hazlitt, complained bitterly of the neglect of the age for old writers and accused his contemporaries of an assumed and insincere admiration for these writers to whose names they always took care to refer with a proper show of reverence, while they carefully refrained from any actual acquaintance with their works.

Whether Hazlitt's criticism also applied to

the medical profession of the day we do not know, but it certainly does to ours, and it can hardly be gainsaid that a closer intimacy with the work of our medical great-grandfathers would exert a praiseworthy restraint upon our actions. The results of our ignorance of these ancient tomes are always amusing and not seldom redound but scantily to our credit. Witness the logomachy which waged two or three years ago between two of the best known French surgeons before the highest medical tribunal in France, for priority of claim to a procedure (the forcible reduction of vertebral gibbosities in Pott's disease) which, according to authentic records, Hippocrates adopted from a predecessor.

With regard to laminectomy for spinal fracture, a brief historical retrospect reveals some interesting facts. Away back in the second decade of the century it was the unfortunate rock upon which split such eminent authorities as Sir Charles Bell and Sir Astley Cooper; the one contending for, the other against, the operation with a bitterness of spirit sufficient to make the latter give vent to such epithets against his adversary as "blockhead" and "foolish person," while Mr. Bell gave the retort discourteous by accusing his calumniator of "gross ignorance and a wrong mode of teaching."

In those early days who was to decide when such giants fell out? From their time on, however, every observer of note has condemned the operation in the class of cases under consideration in unequivocal terms, and we need come no further forward in the century than 1845 to find in the Fothergillian Gold Medal Essay on the Curvatures and Diseases of the Spine by R. W. Bamfield, Esq., London, this condemnation expressed in terms as scientific, and for reasons as cogent, as any that can be advanced at the present hour.

That the next thirty-four years had done nothing to remove this surgical anathema is obvious from the following quotation from the work of the most eminent neurologist of his day in Germany, Leyden. (Klinik der Rückenmarks-Krankheiten, Vol. I., p. 347). He says: "Doch haben sich schliesslich die Chirurgen von dieser höchst undankbaren Operation abgewendet und sie ist, soviel mir bekannt, in den letzten Jahren nur von den kühnen and operationslustigen Amerikanern gemacht. (Still surgeons have finally abandoned this supremely thankless operation and—so far as I know—it is undertaken in recent years only by the enterprising and operatively-inclined Americans.") We have turned the expression "kühnen und operationslustigen" as mildly as possible; it is capable of an infinitely more ironical rendering. We cannot, however, refrain from emphasizing the distinction which the author makes, either consciously or unconsciously, between surgeons and Americans. The biting sarcasm of this utterance should have been sufficient in itself to thrust the operation at once into innocuous desuetude in this country. But it was not, and the "operationslustigen" have continued, with a persistency which baffles comprehension, to contribute grewsome data and new-old ideas concerning a surgical procedure which should have passed into the darkest oblivion many decades back.

He would indeed be a "foolish person" and "a blockhead" who would attempt to deny that enormous advances have been made both in surgery and in neurology since the days of Cooper and Bell, and even since Leyden's time, but equally unduly confident is he who thinks that such advances have brought us any nearer to the solution of the problem under consideration. Notwithstanding all this we feel sure that there are those who will continue to look forward with the utmost confidence and hope for brilliant results from laminectomy in spinal fractures. For the benefit of such we cannot do better than to quote the sententious utterance of a brilliant and witty French neurologist (E. Brissaud, Leçons sur les Maladies Nerveuses, Paris, 1895) upon this point: "I remain convinced that the surgery of the spinal cord is full of promises, just as hell is paved with good intentions."

ECHOES AND NEWS.

NEW YORK.

No Plague Yet in New York.—The "City of Rome" and the Allan Line steamer "State of Nebraska," both from Glasgow, show not the slightest trace of any bubonic plague.

Illegal Practicing.—An agent of the County Medican Society charged Louis Capobianca of No. 118 Forsyth Street, in the Essex Market Court with practising medicine without being registered. The defendant asserted that he received his diploma in Italy, and did not know that he would have to register in this country. He was held for trial.

Dr. Winters Injured.—Dr. Joseph E. Winters, in company with his daughter, were thrown from their carriage August 31st near Stockbridge. Miss Winters escaped with only slight bruises, but Dr. Winters' arm was broken in three places. Dr. Winters was taken to Council Grove, where he is staying, and Dr. McBurney was called to set his broken arm.

Dr. Williams Sandbagged. — Dr. Hamilton Williams, the Coroners' physician, was recently attacked by ruffians and seriously injured.

Yellow Fever in New York.—Ignacio Garcia, a steerage passenger on the Spanish steamer "Leon XIII.," which arrived September 2d, from Havana, was removed to-day to Swinburne Island for treatment and observation. Dr. Doty said Garcia showed symptoms indicating yellow fever. The steamer and her passengers were held at Quarantine for disinfection and to serve out the balance of the quarantine period of five days.

Bequest to Rochester Hospital.—The Rochester City Hospital stands a chance of receiving a bequest of $50,000 from the will of Judge Francis O. Mason of Geneva. By the terms of the will the sum of $50,000 is left to the Geneva Hospital under the express condition that the hospital shall not have an officer known as a chaplain or have any person in its service at any time any part of whose duties it shall be to perform such services as are usually performed by a chaplain. The will provides that in case such request is not complied with the bequest shall revert to the estate of the testator and then be given to the Rochester City Hospital. Not more than $10,000 of the sum is to be expended for buildings.

Novel Treatment for Hay-Fever.—An artist of this city spent an hour or so in a cold storage warehouse recently in order to obtain relief from a persistent attack of hay-fever. On coming out he found that his cheeks were frostbitten.

Stramonium Poisoning. — Poisoning from Jamestown weed, Datura Stramonium, seems to have its quota every fall. Two cases are reported this week from Brooklyn. George Lenz, four years old, who lived with his parents at No. 725 Douglass Street, died, and Joseph Johnson, of the same age, and living at the same address, is on the point of death. The little fellows went lately into the vacant lots on Eastern Parkway and are thought to have eaten the thorn apple."

Randall's Island Fire.—Painters working on the roof of the School for the Feeble-Minded on Randall's Island, Wednesday, dropped a live coal on the roof. When they stopped work at 5 o'clock the coal was smouldering, and ten minutes later the roof was on fire. The blaze was quickly discovered, and the island fire department soon had it extinguished. The damage was slight.

PHILADELPHIA.

Thief Caught in Hospital.—A discharged employee of the Pennsylvania Hospital recently climbed over the wall and was discovered by one of the resident physicians after he had stolen a watch and several pins. He confessed and admitted that he meant to steal.

Decision Against Compulsory Vaccination.—The law requiring vaccination of school children was upheld by a recent court opinion in this city. In Bradford County it has been decided that the law is not mandatory but optional. The son of a Christian Scientist was refused admission to a school because of non-vaccination. The school board then obtained a verdict for two dollars from the father, the penalty of non-attendance. A higher court reversed the decision as above stated.

Woman's Medical College.—The vacancy in the chair of Professor of the Principles and Practice of Surgery has been filled by the appointment of Dr. W. L. Rodman. Dr. W. V. Laws has been chosen Professor of Operative and Clinical Surgery. During the month of August 362 new patients were treated at the hospital.

Public Baths and Contagious Diseases.—The epidemic of catarrhal conjunctivitis in the city was believed to have been traced to the public baths by two hospitals, the Board of Health being notified to that effect. A medical inspection was ordered and the 9 baths found to be in a satisfactory condition as to disinfection and precautions taken against contagious diseases.

New Children's Hospital.—Germantown dedicated a new Children's Hospital September 3d. The building accommodates 25 patients, but this capacity will soon be doubled. The hospital is the outcome of the suggestion of a six-year-old girl who, a few days before her death, asked that seventy-one cents she had saved be used to start a hospital for children.

CHICAGO.

Fasting by Divine Command.—"Dr." Henry R. Wallace Andrews, a minister and veterinary surgeon, broke a fast of forty days, during which he ate no solid food of any kind, at the County Jail to-day. The meal after his long period of self-denial was composed of a slice of watermelon and a few ounces of sponge cake. He fasted in accord with a divine command.

Obituary.—Dr. Ernst Schmidt, of 424 North State Street, died at his home August 26th. He was for more than forty years one of the foremost physicians of the city, having been at the head of the consulting staff of the Alexian Brothers' Hospital for several years and having acted in the same capacity for the Michael Reese Hospital, the individual supervision of which had been intrusted to him by the founder. Dr.

Schmidt was born March 2, 1830, in the village of Ebern, Bavaria.

Discuss Lymph Cure.—Physicians from all parts of the country, members of the American Animal Therapy Association, the society organized in New York in September last by Dr. Joseph R. Hawley of this city, met here August 29th and 30th, to discuss primarily the latest developments in the Roberts-Hawley goat-lymph compound and thyroid extract, and incidentally all forms of animal lymph. The cure of septic diseases of a chronic nature by the use of lymph made from the lymphatic glands of goats is at present attracting the attention of the entire medical world, by reason of the success attained. Particularly good results have been obtained in cases of local paralysis, locomotor ataxia, certain forms of insanity and premature decay and old age.

Trinity Diet-Kitchen for Infants.—Dr. George T. Palmer, medical director of the Trinity Diet-Kitchen for Infants, has just issued a report, showing the work of that institution during the last two months. He reports almost 700 babies cared for and only one death. The low death-rate is attributed by Dr. Palmer to the high grade of milk and foods given out, to the purity of the spring-water supplied, and to the ice that has been given to all to preserve the food.

The Norwegian Hospital.—On August 22d a lawn-party and musical and literary program were given for the benefit of the Norwegian (Tabitha) Hospital.

State Board on Lodging-Houses.—The Committee of the State Board and its Chicago inspector will ask the Board to draft a law for governing the lodging-houses more like the law now in operation in New York City. This law will include more rigid sanitary regulations, which, if enacted and enforced, should take away Chicago's reproach in this regard.

GENERAL.

Plague in Glasgow.—Present reports indicate 13 doubtful cases in the hospital and 103 suspicious persons under observation.

Yellow Fever in Senegal.—The mortality has been excessive. Fifteen per cent. of the population has been destroyed. One per cent. of the population are dying every day. The sick live only three to four days. Of those affected the mortality is eighty-six per cent. The physicians are suffering as much as the rest of the population. Negro priests, who are immune, are alone left to give the last religious rites.

Obituary.—First Lieut. Easton Burchard, Assistant Surgeon, Fortieth Infantry, died of dysentery contracted in the line of duty, on September 2d, on the transport "Grant." He was born at Bonnot's Mill, Mo., on March 29, 1865. He entered the service as Assistant Surgeon of the Fifth Missouri Volunteers on May 4, 1898, and was appointed First Lieutenant and Assistant Surgeon in the Fortieth Infantry on August 17, 1899.

A $10,000 Fee.—Arthur Goebel, brother of the dead Governor and his devisee under the will, has placed a claim against the estate of Gov. Goebel for $10,000 for Dr. McCormack's services. Gov. Goebel and Dr. McCormack had long been close friends and when Goebel was shot Dr. McCormack, who happened to be in Frankfort at the time, was one of the first physicians to come to his assistance. The wound was mortal, but knowing that if life could be prolonged a few days the Legislature would decide the contest, and that in the state of feeling resulting from the assassination Goebel would probably be declared Governor, Dr. McCormack took every step known to science to maintain life. Dr. McCormack refused to render any account for his services on the ground of personal friendship.

Kafir Cure for Dysentery.—It is reported that several of the army surgeons have tried the Kafir cure for dysentery with marked success in some very bad cases. It consists of a decoction of the root of the pelargonium or geranium. There are upward of 150 different kinds of wild geranium in South Africa, and each seems equally efficacious in cutting short an attack of dysentery. The Kafirs and Zulus simply chew the geranium root, but a more elegant preparation is made by boiling the root in milk. One or two tablespoonfuls are given every two hours till all symptoms of dysentery have disappeared. It would be desirable to obtain the name of the species. Our native geraniums, while having a mild astringent action, are not very efficacious in dysentery.

Cholera Spreading in India.—The Committee of One Hundred on India Famine Relief received the following cablegram September 4th, from William T. Fee, United States Consul at Bombay, Chairman of the Americo-Indian Famine Relief Committee: "In spite of previous rainfalls the situation is again alarming. Crops are beginning to wither. Great anxiety is felt lest they be destroyed. Starvation still threatens. Money is needed for buying food, as well as clothing. The ravages of cholera are increasing. Let America maintain her splendid benevolence. The need is undiminished." The Committee acknowledged the receipt yesterday of additional subscriptions amounting to $1,071.05, which makes the total of the fund to date $227,290.88.

To Colonize Vegetarians.—The Rev. H. S. Clubb of Philadelphia, President of the Vegetarian Society of America, is at Chattanooga, Tenn., in the interests of this society. The members are scattered all over the United States, and

during the last four years, so President Clubb states, there has been a growing spirit among the greater part of its members to separate themselves more distinctly from the rest of society. It is with this spirit that his journey has been made to the South. He is now in search of a suitable place for colonization. What he wants is a place where all kinds of fruits and vegetables can be grown on an extensive scale. This being found the scheme is to colonize the vegetarians and to engage in extensive fruit-farming for the Northern markets. Along with this the industry of making and selling peanut butter will be pushed.

Consanguineous Marriages and Consumption.—Dr. C. A. Davies of the Isle of Man in a recent communication to the British Medical Association said: Consanguinity in marriage among the Manx people had led to much illness in the offspring. There has been little crossing of races among them since the twelfth century, and a custom exists on the island to-day of discouraging marriages between persons living in different parishes. Hence there exists all over the island a condition of close "inbreeding." As a consequence the general death-rate from consumption is 25.70 per 10,000, double that of England and Wales. In Lonan, an isolated part, where all of the inhabitants of the parish have only three or four surnames, the rate is 41.79 per 10,000, while in Peel, where many more strangers come, it is only 15.19.

Statistical Study.—The members of an International Commission, with delegates from every European country and America, which meet at the Paris School of Medicine this past week, have decided to recommend to their respective Governments an international system of nomenclature in classifying the causes of deaths, for the purpose of rendering comparison possible between the death statistics of the civilized countries. The system recommended is that of Prof. Bertillon, whose anthropometrical method for the identification of criminals is in use by the police of the civilized world, the chief reason assigned for this choice being that the French classification is already in use in North and South America, and in several European countries. The recommendation, if adopted, will take effect January 1, 1901. There was only one dissentient to the recommendation, the delegate from Germany.

Typhoid in Newark.—The local board of health in tracing the many cases of typhoid fever recently reported has found that a large percentage of the victims are girls employed in the Clark thread mills, in this city and Kearny. Investigation showed that these girls have been drinking considerable water taken from driven wells in the mill yards. When Bacteriologist Connolly examined the water he found that, while that taken from the well at the mill on the west side of the Passaic River was fairly good, that taken from the wells in Kearny, on the east bank of the Passaic, was badly infected.

Decreasing Birth-Rate in Europe.—New statistics demonstrate the fact that in all the countries of Europe, with the exception of Russia, the percentage of increase by births has been diminishing since 1891, the average decline being three per cent. The greatest difference is shown by England, where births have receded from 34 per cent. to 29.1 per cent., and the smallest by Norway, namely, 0.1 per cent. From 1871 to 1875 the increase by birth in Germany was 39.9 per cent., but in 1891-95 this had sunk to 36.3 per cent., and in the year 1897 it went down to 36 per cent. The general average from 1881 to 1885 was 36.8 per cent., but is now 36 per cent. More noteworthy is the decrease in Austria where in the course of twenty-five years it has dropped from 39.5 per cent. to 37.4. In Belgium the percentage in 1871 was still 32.1, but in 1897 only 29; and in France the shrinkage in the same period was from 25.5 to 22.4. Next to Norway the most favorable data are reported from Switzerland.

Typhoid in Paris.—The official medical bulletin this past week reveals a disquieting sanitary situation in Paris. Statistics show that typhoid fever prevails in an almost epidemic form. There were recorded from the beginning of the year to August 13th 3,148 cases, of which 568 resulted fatally. This is a considerable increase over the records of previous years. Paris is never free from this disease, but until 1898 the number of cases for the corresponding period did not exceed 700. Moreover, the figures for the last few weeks of the present year show a perceptible increase over those of the earlier period. The prevalence and spread of typhoid are due entirely to bad water. One of the sources from which Paris is furnished is known to be infected with the typhoid bacillus, though the water from all the others is perfectly pure. The authorities, however, declare that they are compelled to utilize the contaminated source because the others are inadequate.

More Surgeons Needed in Philippines.—Many posts in that tropical climate are now without doctors. The number of military stations has been increased from 125 to 375 since last January. Although the sick report is phenomenally small, being less than 9 per cent. of the effective force, the large number of stations occupied and the increased amount of executive and administrative work that must be done in addition to the hospitals require at least one doctor for every post of any appreciable size in addition to those required for the administration personnel. At present there are but 366 medical officers for the entire work, including those with the "Relief" and those on duty in China. The result is that there is a large number of posts without any medical attendance except such as is furnished by members of the hospital corps, while a con-

siderable number of stations have no medical attendance of any kind.

Poisoned by Eating Crabs.—Five persons were poisoned in Peekskill, N. Y., Wednesday, 5th, by eating crabs. They were Mr. and Mrs. Edward J. Cole of No. 113 Union Avenue and their three guests. Mr. and Mrs. Cole and a Mr. Tate were unconscious all night, and were still very ill this morning.

Elmira Reformatory Appointment.—Announcement was made September 5th by the State Civil Service Commission that William W. Simcoe of Elmira had been appointed from the civil service eligible lists as keeper and captain at the Elmira Reformatory, at an annual salary of $3500 and board allowance.

CORRESPONDENCE.

OUR LONDON LETTER.

[From Our Special Correspondent.]

London, August 25, 1900.

ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION — ADDRESS ON OBSTETRICS — THE ABANDONMENT OF ROUTINE VAGINAL EXAMINATIONS THE GREATEST ADVANCE IN MIDWIFERY — OCULAR HEADACHES — PNEUMONIA IN CHILDREN—SOUTH AFRICAN WAR COMMISSION—THE DEADLY "RED TAPE" DODGED BY MR. RUDYARD KIPLING—ANNUAL CONGRESS OF THE ROYAL INSTITUTE OF PUBLIC HEALTH—ATTACK ON THE GOVERNMENT FOR THE FAILURE TO PROVIDE SANITARY OFFICERS IN THE SOUTH AFRICAN WAR—THE DANGERS OF RAILWAY CARRIAGES—TUBERCLE BACILLI IN THE DUST—WATERTIGHT SCHOOLS.

At the annual meeting of the British Medical Association Dr. William J. Smyly of Dublin delivered a highly important and practical address in obstetrics on "Maternal Mortality in Childbed." In a rapid historical survey of the subject he said that obstetricians in the past pursued their work in the face of failure little short of disastrous. In the first half of the present century the mortality, especially in hospitals, was probably greater than at any other period of the world's history. But toward the close of the seventies improvement suddenly occurred. In the Paris Maternity, for example, the mortality dropped in one year from 8 to 4 per cent., and in 1881 to 1 per cent., and has since improved. At the Rotunda Hospital during the period 1870-1876 1 in 45.5 women confined died; from 1890-1896, 1 in 181.7. In 1870 antiseptic principles were first applied to obstetrics, but the original system was too cumbrous for general practice. Then the spray was replaced by the douche and the vagina was douched before and after every labor; soon the uterus was included in the process. But accidents and even death, due to injection of air or antiseptic fluid into the veins, began to multiply and even an outbreak of puerperal fever was traced to the douche in the Berlin Charité Hospital. Leopold showed that by thorough disinfection of the external parts and avoidance of unnecessary examinations better results were obtainable than by prophylactic douching. The teaching of Semmelweis and Sir James Simpson that infection is chiefly carried by the hands of the attendants is now generally accepted. No handling, no sepsis, was not far from the truth. Leopold had shown that patients delivered without vaginal interference made better convalescence than under the most scrupulous antiseptic precautions. Both experience and bacteriology showed that absolutely aseptic hands could not be insured by any known process. The best practice was to substitute external examination for the vaginal, which Dr. Smyly claimed was the most important advance in modern midwifery. It is impossible to exaggerate the far-reaching importance of this statement which is a direct impeachment of the current practice in obstetrics all over the world, of a procedure which must be performed hundreds of thousands of times every day and to which every pregnant woman is exposed, and this by a past master of the Rotunda Hospital, speaking with all the authority of the great Dublin School of Obstetrics and at the most important medical congress in the British Empire. But Dr. Smyly went further and claimed not only that external examination was safer than vaginal, but also that it was more useful in diagnosis. At first he found it difficult to believe this, having for years practiced the ordinary method. By external examination he said the presentation and position of the fetus, whether it was living, dying or dead, may be ascertained and the course of the labor followed. Pelvic deformity was suggested by pendulous abdomen, abnormal mobility and obliquity of the uterus. In prolonged labors material danger was indicated by thickening of the upper and thinning of the lower uterine segments, elevation of the contraction ring and prominence of one or both round ligaments.

In the Section on Ophthalmology Mr. W. A. Brailey delivered an introductory address on "Ocular Headaches." Accommodative movements were bound up with the great majority of ocular headaches. It was a general law that the larger the ocular error the less the effect produced on the head, because a great defect of accommodative power led to its abandonment, the patient seeing as best he could without it. So also uncorrected presbyopia rarely caused headache except just at its commencement. Spasm and headache were more easily produced by moderate inequality of refraction, especially if astigmatic, and most of all by astigmatism with asymmetry of the axes. Errors of the external muscles produced headache but less often than errors of the accommodative muscles, although more often migraine, giddiness and general distress.

In the Section on Laryngology Dr. Scanes Spicer read an important paper on "Nasal Obstruction." An obstruction to the inspiratory current through the nose necessarily produced a fall of air tension and "dry cupping" of the mucous membrane of the nose and the accessory sinuses. This led the speaker to regard nasal stenosis as a preeminent factor in the etiology of catarrhal throat, nose and ear processes, which he found was borne out by clinical experience. It often happened that the most diverse cases of nasal obstruction were sent to him for operation for adenoids in which adenoid hypertrophy was absent or insignificant. In most cases of adenoids the condition was only a part, and often a small part, in the pathological condition of the so-called adenoid child, fractured and deflected nasal bones and cartilages, turbinal enlargements, hypertrophied tonsils, pushing up and growing up behind the soft palate, stunted nostrils and even vaulted palate were often more important features. The operation for adenoids or nasal obstruction was often incorrectly regarded as the termination of the case. It was only the first step. Developmental and respiratory exercises for the expansion of the chest and the restoration of respiratory vigor required attention.

Dr. Nestor Tirard (London) read a very able and lucid paper on "The Nature and Varieties of Pneumonia in Children." Bronchopneumonia had attracted more attention in children than lobar pneumonia. The distinction was not well defined between bronchopneumonia and vesicular bronchitis. Bronchopneumonia was common up to the age of three, after that many cases conformed to the type of true lobar pneumonia. The extent of lung engorgement was greater in children than in adults and this probably was responsible for the confusion with bronchopneumonia. As to abnormal forms the temperature might be extraordinarily high, say up to 106° F., either at the beginning or just before the crisis; there might be an unusually sharp crisis and a fall of 9°, 10° or 11.5° F.; and there might be wide oscillations of temperature, 5° of difference between the night and morning temperatures, which was apt to confuse diagnosis. The initial symptoms were occasionally like those of tuberculosis meningitis—headache, squint, retraction of the head and vomiting; or the sickness and delirium might suggest cerebral tumor. In spite of all the symptoms of pneumonia physical signs might be absent. In two cases quoted the dulness and tubular breathing appeared only at the crisis.

Very little fresh evidence of a usual character and calling for any remarks has been taken by the South African Hospital Commission since my last communication. The Commission has now sailed for South Africa, where they will pursue their inquiries. They will be away two or three months; on returning to England fresh evidence will be taken. The evidence of Mr. Rudyard Kipling shows the deadly influence of "red tape" in army organization, and his method of evading it is interesting. He visited the Cape-town hospitals and the doctors told him they had everything they wanted and the hospitals were by no means full. He then went to the nurse and asked her if she wanted anything, saying, "Because I can get things out of the 'Absent-Minded Beggar Fund.'" The reply was, 'We want pyjamas. Don't bring them to the Store Issue Department but to the back-door.' So I got 98 pairs of pyjamas, unloaded them at the back entrance and gave them quietly to the nurse." At another hospital he asked the same question and received the same answer—that it was no use taking things to the officials, but that if he brought pyjamas and pillow-slips to the back entrance they would be obliged, because these were wanted.

The Royal Institute of Public Health has held a very important annual Congress at Aberdeen attended by delegates representing the principal sanitary and municipal bodies throughout the United Kingdom. The President, Lord Aberdeen, said that sanitary legislation dated only from a hundred years ago when Factory Acts were passed for the protection of children, who were often herded together promiscuously within the actual factory building, and for restricting the age of employment to those above eight. Acts to prevent contamination of water supply with sewage followed. In 1846 powers were given to a central authority—the Privy Council—to issue orders for preventing the spread of disease. In 1889 the Infectious Disease Notification Act was passed. The work of the Congress was so extensive that it had to be taken in different sections—Bacteriology and Comparative Pathology, Chemistry and Meteorology, Architecture and Engineering, Municipal and Parliamentary Hygiene, Preventive Medicine and Vital Statistics. In the last section Prof. Simpson of King's College, London, made a violent attack on the Government in connection with the South African scandal. After the experience of the Crimean war, he said, it was discouraging to find that 1 in 20 of the soldiers suffered from a more or less preventible disease, typhoid fever. There was a serious defect in the sanitary administration in South Africa. In the Afghan and Egyptian campaigns sanitary officers were appointed. In the latter dead camels and other transport animals were burned and there was very little typhoid and practically no ophthalmia. But in the present war no sanitary officers had been appointed, although Sir Walter Foster had pointed out the necessity. Never before had greater attention been paid to the sick and wounded, but the same solicitude had not been paid to prevention of disease. He attached no blame to the Army Medical Service, which could not perform impossibilities. They were working under pressure, one was required to do the work of two. A lesson might be taken from the Germans, their force going to China was accompanied by a special sanitary service. Since

1892 no sanitary officer had been appointed at Aldershot. Sanitary work was now attended to by quartermasters.

Prof. Hamilton of Aberdeen read a paper on "The Danger of Spreading Disease by Vehicles of Transport." The danger of spreading disease by dust impurities was not properly grasped. He confessed that he had a feeling of horror on entering a railway carriage, school or place of public resort. He had made a number of experiments with the dust taken from the floors of railway carriages. Two out of twelve samples were contaminated by the tubercle bacillus. The so-called cleaning of carriages consisted merely in stirring up dust. To guard against the spread of disease the flooring should be movable and the cushions detachable, and the carriages should be periodically disinfected. People will spit on the floor in spite of everything done to prevent it. The sputum might contain the organisms of tuberculosis, pneumonia, diphtheria or influenza, which after drying became disseminated in the dust. At present railway companies studiously washed the outside of carriages, washing of the inside has yet to come. He thought that schools ought to be watertight compartments, the walls and ceilings covered with watertight cement, and the roof and flooring similarly waterproof, and that every schoolroom ought to be hosed or otherwise cleansed once a week.

TRANSACTIONS OF FOREIGN SOCIETIES.

German.

A CASE OF POLYNEURITIS—LINGUAL GANGRENE—THE FACIAL NERVE AND WEEPING—SPINAL-CORD TUMOR—MARRIAGE AMONG THE TUBERCULOUS — DIGESTIVE LEUCOCYTOSIS — PRODUCTION OF MILK—RUPTURE OF THE UTERUS—HEMOSTASIS AND FAT EMBOLISM — GUNSHOT WOUND OF THE HEAD WITHOUT SYMPTOMS—DOUBLE ANKYLOSIS OF THE HIP—TUBERCULOSIS OF THE STERNUM—FOREIGN BODY IN THE ESOPHAGUS—IN THE RECTUM.

EWALD, at the Gesellschaft der Charité-Aerzte in Berlin, June 28, presented a patient with malarial polyneuritis. He had moderate paralysis of both lower extremities, especially of the extension of the great toes, together with a psychosis manifested by failure to articulate and remember. After this case he discussed another which had a most obstinate fever of the tertiary type, which resisted all known methods of treatment.

WERNER, at the Aerztlicher Verein in Hamburg, June 26th, exhibited a case of traumatic lingual gangrene. This patient, a prostitute, had probably acquired syphilis, which never within her observation or memory had given florid signs and which, therefore, had never received any systematic medical attention. In consequence of this infection a frank attack of tabes dorsalis began about a year previously and latterly had gone on to mental aberration, showing foolishness, weird imagination, utter falseness and various voice changes. The last development had been gangrene of the tongue, due to hysterical self-damaging tendencies. Frequent and persistent biting had been manifest. The area affected was the anterior third. The tongue had separated along a line of imprint made by the teeth and the gangrenous part had come away in masses, leaving a clean stump.

SANGER showed a sixteen-vear-old boy, who by a fall from a wagon had received a fracture of the base of the skull on the left side. It was followed by paralysis of the auditory and of the facial nerves, the latter in all its branches; later there was disturbance of taste in the anterior third of the left lateral half of the tongue and some weakness at the base of the tongue on the same side. But tears flowed equally well from each eye. The point of the case seems to be that the tear function is under control of the trigeminus, facial and sympathetic nerves and that the supposition that the facial alone supplies it is probably not correct.

BÖTTIGER reported a successful case of removal of a tumor of the spinal cord. The patient was sixty-five years old and had complained of pain, increasing in severity and distribution, in the left leg and of paresis with pain in the right lower extremity with a zone of analgesia about the hip. At the operation the arches of the fifth to the tenth dorsal vertebræ were removed and the dura exposed. An extradural psammoma was found. The wound healed well and all the prospects were for a good recovery.

GERHARDT at the Verein für innere Medicin in Berlin, July 2d, discussed the propriety of marriage of the tuberculous. The question had come up late during the last Tuberculosis Congress with insufficient time for its ripe consideration. Literature is full of papers on this subject, aiming to give opinions and guidance to the family practitioner in advising about this all important question. It appears that the consensus of opinion makes marriage worse for the woman than for the man, because she is oftener infected through sexual intercourse. The reason for this is that in a large proportion of tuberculous males the sexual apparatus is involved and in about 5 per cent. of all cases examined the same condition is true. Weber examined 68 persons; of 39 healthy males probably 1 had been infected by his wife; of 29 females 18 traced their infection to intercourse and half of these in wedlock. One tuberculous man lost four, and a second three wives by his own infection, all seven dying eighteen months after marriage. Virchow long has taught that after marriage a previously existing tuberculosis is apt to get worse, and that males of tuberculous families are apt to go to pieces soon after marriage. The drain of pregnancy and lactation is much increased by the presence of tuberculosis and for

the child this too adds a very great danger. Practically a good rule would be for a victim to abstain from marriage at least one year after apparent cure. In this connection Virchow relates the case of a young physician who was considered cured of the disease, had remained some time in a trying climate and finally married. His tuberculosis returned soon after and resulted fatally. Another practically important and difficult question deals with the interference with pregnancy owing to tuberculosis. If the disease is steadily progressing, the author thought this should be done. In his experience digitalis in slowly increasing doses is a very good treatment for the frequent abnormal sexual appetite so common in tubercular males, and often satiated by pollution. Sometimes gonorrhea or syphilis may be superimposed upon the tuberculosis. Appropriate treatment will eliminate either from the diagnostic or therapeutic aspect of the case.

FURBRINGER criticised the view of the speaker as too discouraging, and added that he had seen tuberculous men positively improve under the quiet of married life, in contrast with excesses of unmarried life.

JAPHA read the report of his experiments on himself as to digestion leucocytosis. He found that a greater increase in the white cells occurs after dinner than after the other meals, for instance breakfast, although of food rich or poor in albumen. He also determined that when fasting after midday a leucocytosis occurs. This he deems due to the daily influence of food ingestion. The increase is chiefly in the polynuclear cells. The supposition formerly held that these cells proceed from the intestinal wall is to be abandoned because they are of the mononuclear variety. Here also falls to the ground the theory that they originate directly out of the absorbed peptone in the intestinal wall. In his opinion they come directly from the bone marrow and their appearance is merely the expression of digestive activity. Apparently the diagnostic value of this condition is not great and depends upon whether or not this variation can be further established.

WASSERMANN, quoting the results of experiments by Bordet, said that serum of one kind of animal injected into another bestows upon the latter blood its characteristics. Again, milk injected into the circulation of an animal will determine upon the milk of that animal many of its own features. It is a well-known fact that the albumin in the milk of many animals varies widely from species to species. If cooked milk is injected the experiment fails utterly. From these premises it seems possible in this way to practically duplicate human milk.

FUNKE at the Unterelsässischer Aerzteverein, June 23d, read the history of a recovery from laparotomy for rupture of the uterus, as follows Primipara, aged twenty-one years, at term; at the beginning of labor the head of the living child impacted in the pelvic canal high up; finally still birth by asphyxia; apparently good condition of the mother; no placenta delivered; examination showed rupture of the uterus and induced syncope and collapse; laparotomy at once; placenta removed from the abdominal cavity; toilet of the peritoneum; suture of the rupture which extended laterally from broad to broad ligament in front; drainage through the cervix first provided for; very careful suture of the peritoneal coat; closure of the abdomen. The speaker considered the careful suture of the peritoneum the most important detail and the above treatment the best.

RECKLINGHAUSEN reviewed the literature on traumatic hemastasis and fat embolism with the reports of Perthes, Willers, Huete, Vogt and Braun, of the universal hemorrhagic infiltration of the head, neck and shoulders without any deep or external hemorrhage of importance after tremendous pressure about the thorax and abdomen. He then presented the organs of a fifteen-year-old boy crushed in a wheel about the upper part of the chest. The eighth and eleventh ribs were bowed inward; the eighth and ninth were broken at their angles; the last two thoracic and the first three lumbar vertebral arches were broken and the peritoneum torn off; hemorrhage into the fatty tissue of the spinal canal; protruding eyeballs; thick ecchymosis and hemorrhagic infiltration of the skin of the head, neck and shoulders, into the mucosa of the throat and temporal muscle tissues, subpleural and pulmonary ecchymosis and pulmonary fatty embolism apparently from the subcutaneous regions; no cutaneous external hemorrhage, except through abrasions. The conditions seemed limited to the veins and especially to those which have no valves. The cause of these hemorrhages seems, first, the sudden pressure arrest of the blood-current with damming back of the blood, and, second, actual bursting of the small veins not provided with valves.

NAUNYN in the discussion said the infrequency of valves anywhere in the veins favored such conditions. Even the vena cava has no valves until it enters into the heart.

BRAUN contributed at the Altonaer Aerztlicher Verein, April 25th, a case of gunshot wound of the left temporal bone without cerebral symptoms, either primary or secondary. Upon opening the scalp-wound the bone was found shattered over an area the size of a dollar and deeply depressed. The fragments were all removed. Those of the inner table were more numerous and smaller than those of the outer and crowded under the firm bone margins. The bullet was found flattened out between the dura and the cranium. The membranes were intact and the brain pulsated normally. No complications occurred. He also exhibited the brain and left petrosal bone of a twenty-five-year-old man operated on for abcess of the cerebellum. The origin of the disease

was evidently middle-ear lesion and the diagnosis of meningitis was excluded, because the pulse showed pressure and the temperature was subnormal. Somnolence came on and von Bergmann laid the temporal bone bare and entered the brain in the left temporal lobe along the lowest temporal convolution. Pus was not found. The bone-wound was then extended backward to the angle between the sigmoid and transverse sinus. A small abcess cavity situated far in near the bone was evacuated and drained. At the autopsy meningitis was not found; the abcess was in the left lobe of the cerebellum in the angle between the tentorium and the petrosal bone. The middle ear had been destroyed and the facial nerve and canalis Fallopii directly infected. At the meeting of May 16th he introduced two women both operated on four weeks previously on the same day for ruptured ectopic gestation. Internal hemorrhage threatened life. At the laparotomies the arteries were tied off and bleeding ceased; the sacs were then ablated and the clots and blood washed out of the abdomen. Drainage was put in and the wounds closed. All went well until after a few days fecal vomiting appeared, but this was of short duration and yielded to lavage. Full prompt recovery then resulted.

KRAUSE exhibited a fourteen-year-old girl with double hip ankylosis secondary to purulent arthritis. Through a Langenbeck incision the left femur was severed just through the great trochanter, the end of the distal piece carefully rounded and the proximal fixed portion hollowed out for a false joint. It is hoped that early passive motion will facilitate such joint-formation. The primary dressing was plaster-of-Paris and the position midway between adduction and abduction. He also brought forward a forty-one-year-old woman who had suffered removal of the manubrium sterni and the inner halves of the clavicles for tuberculosis. Complete cure without sacrifice of function of the upper extremity followed.

WILMS at the Medical Society, Leipzig, May 8th, showed a two-and-a-half-year-old child who had undergone external esophagotomy for impacted foreign body. A coin had been swallowed long previously, was easily palpable externally, so fixed as to render extraction through the mouth impossible, and through the wound only after much rather vigorous manipulation. The wound was packed, the esophagus not sewn. Healing occurred down to a very small fistula in three weeks, which itself closed in a few days. Feeding was carried on by stomach-tube carefully passed through the nose. In connection with the above he recalled a case of instructive and curious force illustrating the tolerance of the body for foreign bodies. A laborer still pursuing his avocation presented himself at the clinic August 20, 1899, complaining of rectal obstruction. Examination showed a knife-blade whose handle was palpable in the sigmoid between the navel and the symphysis. He had passed the knife into his rectum with suicidal intent on July 20, 1899. The instrument had bored quite a cavity in the sacrum, and was fixed therein. Easy removal and prompt recovery followed.

SOCIETY PROCEEDINGS.

THIRTEENTH INTERNATIONAL CONGRESS OF MEDICINE.

Held at Paris, August 2-9, 1900.

(Continued from page 355.)

SECTION ON PHARMACOLOGY, MATERIA MEDICA AND THERAPEUTICS.

Digitalis: Its Pharmacology.—The physiological and therapeutical uses of digitalis were discussed by Dr. Lauder Brunton. He first gave a historical résumé of the drug and brought out the apparent differences in its action on the heart of lower animals and of mammals. In the frog the cardiac beats are lessened in number and the contractions are more complete. The heart expands more in diastole and contracts more in systole. In mammals also the cardiac pulsations become slower and more powerful, but in them this slowing of the heart's action is not due alone to its action on the muscular tissue of the heart, as it is with the frog, but is due to stimulation of the cardio-inhibitory center in the medulla. There is a general consensus of opinion regarding the power of digitalis to increase the strength of the cardiac contractions; but this is not the case in regard to its action on the blood-vessels, for some maintain that its action in contracting the blood-vessels is as marked and is an important factor in the action of digitalis, while others maintain that the contraction of the vessels which it produces, if any such contraction exist at all, is slight, transient, and unimportant. Dr. Brunton's view is that contraction of the vessels produced by digitalis in mammals is very well marked, and depends, just as in the case of the heart, partly upon a peripheral and partly upon a central action of the drug. Digitalis has a local action in the muscular walls of the arterioles, causing them to contract, and it also stimulates the vasomotor center in the medulla oblongata. By its combined action of contracting the arterioles and of increasing the power of the heart it raises blood pressure.

Digitalis: Kidney Action.—The diuresis which digitalis produces is probably due to increased pressure within the glomeruli of the kidneys. Digitalis causes contraction of the vessels of the kidney as well as other parts of the body. At one stage of the action of digitalis, when the blood-pressure is very much raised, the secretion of urine may be as completely arrested as if the renal artery were tied. As the pressure begins to fall the secretion of urine becomes greatly increased, but the urine generally shows a trace of albumin exactly in the same way as if the renal

artery were first tied and then the ligature removed. If the pressure in the vessels is naturally high, and the secretion of urine abundant, it could hardly be expected that it would be much increased by the action of digitalis; but if the blood pressure is low, as in people with lax arteries, or where the arterial system is comparatively empty in consequence of mitral regurgitation, the diuretic effect of digitalis is naturally more pronounced.

Digitalis: Its Chemical Composition.—The chemical composition of digitalis is complex, and a good deal of the discordant results obtained by different observers are not only due to differences in the animals experimented upon, but to differences in the physiological action of the preparations employed, even when these preparations have borne the same name. According to Schmiedeberg, the chief components of digitalis are digitoxin, digitalin, digitalein, digitonin, and digitin. Digitin has little or no physiological action, and digitonin but little, so at present both may be dismissed from consideration. The crystallized digitalin of Nativelle consists chiefly of digitoxin, the digitalin of Homolle and Quevenne consists chiefly of digitalin and German digitalin consists chiefly of digitalein and digitonin. The action of these drugs appears to be nearly alike in kind but different in degree, digitoxin being by far the strongest. Nativelle's digitalin, which consists chiefly of digitoxin, was found by Widal to be eight or ten times stronger than amorphous digitalin. Nativelle's digitalin in daily doses of 1 to 2 milligrammes slows the pulse, while 3 to 10 milligrammes of Homolle's digitalin are required for this purpose. The German digitalein may be given in doses three times as great as Homolle's digitalin, or ten times as great as that of Nativelle's.

Digitalis: Therapy.—The therapeutic actions of digitalis or of its active principles are that they (1) regulate the heart's action; (2) assist the falling circulation; and (3) act as diuretics. In cases of palpitation and functional irregularities of rhythm without organic disease, small doses of digitalis, such as five to ten minims of tincture, are sometimes very useful. The good effect of digitalis is well marked in cases of palpitation which have come on from physical strain, as by lifting heavy weights, or from anxiety and worry. In cases where the palpitation arises reflexly from irritation of the stomach better results are obtained by bismuth and rhubarb than by any cardiac tonics, although the addition of nux vomica to these two drugs assists their action. In cases of aortic regurgitation where compensation is complete, digitalis is quite unnecessary. In aortic regurgitation with full compensation digitalis may possibly be harmful, as the risk in such cases arises from fatal syncope. For the blood in the arterial system being in aortic regurgitation emptied backward into the heart as well as forward through the arterioles into the veins, the blood-pressure tends to become very low during the cardiac diastole. Should this diastole be prolonged the pressure may sink much below the normal, and the risk of syncope is increased. But digitalis is of the utmost service when the mitral valves become incompetent, either in consequence of damage to the valves themselves or in consequence of dilatation of the cardiac orifices from weakness after infective diseases, such as influenza, or from failure of the hypertrophy consequent upon aortic regurgitation or renal disease. To get the best results in severe cases the use of the drug should be associated with rest in bed and massage. The absence of exertion tends to lower the pressure which the heart has to overcome in systole, and lessens the rapidity of the cardiac beats. The slowness of the pulsation produced by rest is still further increased by digitalis. It is during diastole that the heart has time to recuperate. It is what might be termed the heart's period of rest, sleep, and repair, and by prolonging it one tends to restore the heart to its normal condition. In fact the empty arteries tend to fill, the distended veins tend to become empty, and the venous congestion which led to enlargement of the liver, indigestion, flatulence, edema of the legs, and albuminuria, tends to disappear. The legs become normal in size, the enlarged liver becomes smaller, the digestion improves, the urine becomes abundant and free from albumen. The pulmonary circulation also becomes freer, the shortness of breath and irritating cough become less and less and finally disappear. The dilated heart being able to contract more powerfully, the ventricular and auricular orifices become smaller, and the valves even though they may be damaged will tend to close the orifices more completely during systole and thus lessen regurgitation. In addition to this the increased force of the cardiac beats tends to oxidize the tissues more completely.

Massage with Digitalis.—By the use of massage in addition to digitalis a good deal of work may be taken off the heart because, instead of having to drive the blood right round from ventricle to auricle, it will only have to drive the blood to the periphery, the movements of the masseur returning a great deal of both blood and lymph from the periphery to the heart.

Dangers of Digitalis.—Dr. Brunton spoke of the dangers of digitalis in cases of fatty heart and very high tension. He said that it has been said with much truth that it is by no means easy to ascertain with certainty that the heart in any patient has undergone fatty degeneration; but when the heart beats are feeble and its sounds are weak, disproportionately to the size of the organ, it is well to be on guard against possible injury from digitalis. If digitalis causes contraction of the arteries as well as of the heart, and the heart has undergone fatty degeneration while the muscular fibers of the arterioles have not done so, the resistance to the cardiac contractions will be increased, and a heart which is already hardly able to carry on the circulation

may be still further hampered by the drug. In such cases, if it is desirable to stimulate the heart by digitalis, the resistance in the arterioles ought to be lessened by the simultaneous administration of nitrites, such as nitroglycerin, nitroerythrol, or ethyl nitrite. The same precaution should be adopted in cases where the arterial tension is high, and the heart is just beginning to fail; but in such cases the risk may arise from the already high tension being increased and leading to a rupture of a vessel in the brain should be remembered. In such cases it may be well to avoid digitalis altogether; but should it from any reason be thought advisable to use the drug, not only should nitrites be given at the same time, but great attention should be paid to the condition of the bowels and liver. There is still an enormous field for investigation in regard to the action of drugs in combination, and although it is not known why the administration of mercury and calomel along with digitalis should greatly increase the utility of the drug, there can be no doubt whatever that this is the case, and that when digitalis alone fails to produce the result desired, it will frequently act most efficiently if mercury be given with it.

Surgical Treatment of Anasarca.—Dr. Menko (Amsterdam) spoke of the difficulties in the medical treatment of anasarca. In those cases in which diuretic, purgative, and diaphoretic treatment has proven unavailing he advocated surgical procedures. That this method has not proven popular it is easy to conceive, since the initial cause of the dropsy is one not amenable, as a rule, to methods of removal. Two surgical procedures are advocated, incision and drainage. Menko employs incisions for those patients who are agitated or delirious, for those who are unable to remain quietly in bed because of orthopnea, also in cases of sclerosis of the skin, induced by persistent edema. Drainage is preferred in all other cases. Somewhat modified Curschmann's cannulas were employed. Several favorable results were reported.

SECTION ON BACTERIOLOGY AND PARASITIC DISEASES.

Toxins and Antitoxins.—Ehrlich of Berlin presented a lengthy discussion on this subject. Toxins, he said, were very unstable substances found in animal and vegetable secretions after a certain amount of chemical breakdown. At the present time no definite chemical definition could be given of this group, as a whole, although many isolated members were chemically analyzable. Many of the toxins are obtained in too minute quantities to permit of analyses and the precise structure of many is hard to obtain, because of the many closely allied bodies found with them. The main proof of a toxin was its biological action. This action being manifested by the physiological action and the bodily reaction, under poisoning, which often results in the formation of some antitoxin body. In order to more correctly define a toxin, notwithstanding the chemical difficulties, a special incubation period was noticeable, in which direction certain analogies exist with the snake poisons. Ehrlich does not believe in the production of antitoxins for certain definite compounds, many of the alkaloids, for instance. The averred results in antitoxin production by morphine, he believes to be erroneous. Toxins form certain specific combinations with protoplasm and thus act in a manner different from that of other poisons. The alkaloids are thought to bring about phenomena in living protoplasm, akin to what chemists term solid solution. In the toxin molecule Ehrlich describes a *haptophore* group, through the chemical behavior of which he attempts to describe its peculiar action. In order to do so satisfactorily he assumes also a *toxophore* group, which can be isolated under certain conditions in its action from the haptophore group. Thus one acts perhaps under the influence of cold and the other of heat. Certain time differences are also noted. Certain *receptors* or lateral binding chains of molecules are called in by Ehrlich to further elucidate some of the problems. These receptor groups exist naturally in some tissues and are absent in others and the phenomenon of natural immunity was perhaps to be explained by the absence of this group of receptors. Antitoxins are held to be these protoplasmic receptors and their peculiar property of neutralizing the action of the toxins is due to their power of fixing, and thus rendering chemically inert the haptophore groups in the toxins. Ehrlich believes that the diphtheria toxin, elaborated by Loeffler's bacillus, is made up of two distinct substances, a toxin and a toxon, both of which possessed a similar haptophore group and thus were acted upon and fixed by the antitoxin. Certain other bodies, designated by him as *toxoids*, are also present in diphtheria cultures. These are thought to be non-toxic modification of toxins, capable of fixing antitoxins, and it is by means of these that the phenomena of quantitative variations in toxic power are to be explained. Toxoids as well as toxins may be utilized in the production of antitoxins and for especially susceptible individuals modified antitoxins might be prepared from such toxoids.

Immunity.—Dr. Buchner of Munich had a much less fantastical series of hypotheses to explain the phenomena of "natural resistance," a term preferred by him to natural immunity. He reverted to his older theory of the alexins, which were believed to be secretions formed by living leucocytes. The phenomenon of phagocytosis was partly sufficient only to account for many of the resistance phenomena and in the destruction of bacteria it was not an indispensable factor. This seems to be proven by the alleged fact that bacteria have been destroyed in internal organs, in exudations, without the presence of leucocytes. Immunity was regarded by Buchner as threefold. Antitoxic, brought about by the previous use of certain specific substances, toxins or

modifications of the same which have altered their peculiar toxic properties; bactericide, in which the action of certain bacteria, living or dead, induce the diminished susceptibility and, themolytic, or a condition brought about by the use of definite erythrocytes.

Malarial Parasite.—Dr. Laveran described two varieties of the hematozoon of malaria, *hemammeba malariae*, designated as *parva* and *magna*, according to size. These two forms might be found in the same person in different attacks and are not to be thought of as distinct species, but purely as varieties of the same organism. Laveran inclines to the belief that the flagella of the malarial parasite are sexual in their function, being male elements. He also maintained that while *anopheles* was undoubtedly the host of the parasite and was perhaps the most frequent agent in the dissemination of the disease, nevertheless malaria could be contracted by other means than by the bite of this particular mosquito. His researches on artificial immunity had been, thus far, unfruitful.

NEW YORK NEUROLOGICAL SOCIETY.

Stated Meeting, Held April 3, 1900.

Frederick Peterson, M.D., President.

Thyroidectomy for Graves' Disease.—Dr. B. Farquhar Curtis reported this case and presented the patient who was operated on in November, 1897. There had been symptoms for some time previously and the goiter was of moderate size. The eyes were quite prominent and the pulse ranged from 120 to 150. Primary union followed the operation, there was no interference with the general health, and she improved steadily from that time. The left half of the thyroid was removed. Less than two months after the operation she was able to resume her occupation of bookkeeper, and her pulse gradually became slower. Apparently the cure was permanent.

Resection of Sympathetic for Graves' Disease.—Dr. Curtis also reported this case and presented the patient, a woman of twenty-nine years. She had had three children, and the disease was worse during each pregnancy. The symptoms lasted about four years before operation and were quite marked during the last two years. In December, 1898, there was a moderate exophthalmos, a rather rapid pulse, and some nervousness. In May she developed a paralysis of the left vocal cord, and twelve days later Dr. Curtis operated on her at Bellevue Hospital, removing the cervical sympathetic on both sides, but leaving the goiter untouched. While in the hospital the pulse was at no time above 106. Since the operation the nervousness diminished, and the eyes improved decidedly. The first effect of the operation was a reduction of the size of the gland.

Dr. Theodore Janeway said that when she returned to him last January the thyroid was increased in size, the pulse about 90, aortic and systolic murmurs developed, and she suffered a good deal from headache. Examination of the urine was negative.

Dr. Curtis said that he had performed nine thyroidectomies for this disease, and in none had the operation itself been complicated in any way, not even by hemorrhage. Of the nine cases, six recovered and three died. The first of the fatal cases was that of a woman who was in fair condition at the time of operation, but became stupid immediately thereafter, and developed a temperature of 107° F. before death. This death seemed to be chargeable to thyroid-poisoning rather than to uremia. In the second fatal case the symptoms were quite severe and the exophthalmos was marked. She did not suffer much from shock, but the day following operation she became very restless and the temperature and pulse rose rapidly. She suddenly succumbed, apparently from heart failure. The third fatal case was that of a woman of twenty-three years, apparently in excellent condition, with a moderately large goiter and a good deal of nervousness. She stood the operation well, but thirty hours later developed a very rapid pulse and respiration, together with a high temperature and great nervous excitement. A little albumin was found in the urine. In all three cases there was nothing, from a surgical standpoint, to criticise; hence, he believed the fatal result might be attributed to thyroid-poisoning. He had never seen such symptoms in an ordinary case of thyroidectomy. It was worthy of note that in one of the cases, marked by a pulse varying from 120 to 150, the pulse dropped to 100 before the patient left the operating-table, and since then varied between 90 and 100.

Dr. Graeme M. Hammond said that the results obtained by Dr. Curtis seemed to point very strongly to the majority of these cases being the result of a hyperactivity of the thyroid gland. It was not improbable that some special nervous condition was the underlying cause of this hyperactivity of this gland. He thought one should hesitate before advising thyroidectomy in cases of exophthalmic goiter in view of a mortality of 33 1/3 per cent. It would be interesting to know the effect of the administration of thyroid extract in cases exhibiting these toxic symptoms after operation.

Dr. E. D. Fisher said that he had seen a patient in whom the cervical ganglia had been resected and her general condition had certainly improved. A number of these operations had been reported, and it seemed to be a justifiable procedure. Some operators reported the occurrence of considerable hemorrhage at the operation and explained it by the marked dilatation of the blood-vessels present, supposed to be a part of the effect of the cervical sympathetic. In some of the cases relief followed even removal of one ganglion. On the removal of each ganglion in the case just presented there was noted a very transient dilatation of the pupil on that side.

Dr. W. M. Leszynsky said that the prognosis of Basedow's disease always seemed to him to depend largely upon the financial ability of the patient. It was for this reason that patients of the poorer class found it desirable to submit to operation. He had tried repeatedly, and in vain, to secure the admission of such patients to our city hospitals for a prolonged course of treatment.

Dr. Fisher thought many of these cases did not respond to even the best methods of treatment, and under the most favorable conditions.

Dr. Leszynsky contended that the early resort to proper treatment, an essential feature of which was prolonged rest, would cure very many cases.

Dr. Peterson took the same view as the last speaker. Both operations described by Dr. Curtis seemed to him very serious ones to undertake until safer methods of treatment had been given a fair trial.

Dr. Curtis said in his cases the opinion had been expressed at the time that the poisonous symptoms were the result of the escape of too much thyroid secretion into the system. It was possible that earlier operation would eliminate this danger.

Word-Deafness and Naming Center. — Dr. Graeme M. Hammond, who read this paper, said that Broadbent first brought forward, as a theoretical proposition, this "naming center," but it had not been placed on a more tangible basis until a case had been carefully observed and reported by Mills. The speaker said he had suggested that the cells which were the most highly organized would be the ones which would naturally retain and register the names. If this were the case, the location of the centers in which the names were stored might differ materially in different individuals. Further study, however, led him to think that such a theory was not necessary to a proper understanding of the cases already reported by others, as well as by himself. Dr. Hammond then presented an illustrative case—that of a man who was injured in a fight on May 8, 1899. He was struck on the temple and was able to walk home, but a few hours later had a severe general convulsion and lost the power to name objects. He could talk voluntarily and could say most words except the names of objects and persons. He recognized familiar objects, as evidenced by gestures, but he could not give their names or repeat them after they had been told him. Dr. Seneca D. Powell operated upon the man and found a linear fracture of the temporal bone and a clot which completely covered the superior temporal convolution. At about the junction of the posterior-third with the middle-third was a hole about the diameter of an ordinary lead pencil and fully one inch in depth. He made an excellent recovery from the operation and soon regained the power of naming objects, but the word-deafness had never entirely disappeared. At the present time he found it difficult to pronounce words of three syllables or more.

Dr. Hammond also reported a case in which there was softening of the middle-third of the second temporal convolution. The patient entered the Charity Hospital on January 9, 1900. He was about forty years of age and had a fair education. He was comatose at the time of his admission, but soon recovered his mental condition for the most part. There was no motor weakness and disorders of sensibility were not noted. The special senses appeared to be unimpaired. He was almost completely word-deaf, and was also completely word-blind, and had absolute agraphia. He could not write from dictation or copy simple geometric figures. He was, however, by no means stupid. Had he lived a diagnosis of a lesion of the superior temporal convolution and of the angular gyrus would have been made, and yet, as shown by the autopsy, neither of these regions had been implicated at all. In the first case, loss of power to name objects did not depend primarily upon the lesion. In the second case, the lesion implicated was almost outside of the accepted region for the naming center. In Mills' case word-blindness had been associated with anomia and yet the lesion had been further from the higher visual center than in the second case just reported. The speaker thought the presence of word-blindness or word-deafness, either alone or in combination, only implies that a lesion in any part of the speech area may give rise to various forms of aphasia. It seemed probable that any lesion disturbing any part of the speech area might cause anomia, and hence it could be understood how two such widely-separated lesions as in Mills' case and in his own could produce like results.

Dr. E. D. Fisher suggested as a possible explanation that in the case just reported the lesion was more deeply seated than in Mills' case—not in the cortex proper, but in the fibers leading from it.

Dr. Joseph Fraenkel said that the patient presented seemed to understand the meaning of the words pronounced, the defect seeming to be rather motor than a pure word-deafness. It seemed to him, therefore, that the man had recovered from his aphasic disorder. Concerning the existence of a naming center, the speaker said that he agreed with Dr. Hammond that there was no distinct naming center. He had at present under observation a male syphilitic, about forty years of age, who had been recently exhibiting impaired mental faculties and a spastic paralysis of the right upper extremity. In addition, he was absolutely unable to name an object shown him, but he could define the use of the object. In this case he felt convinced that there was one sufficiently large lesion in the arm center to encroach slightly upon the speech center. A mild interference with the speech area would lead to marked disturbance of the higher and more complex functions associated with speech.